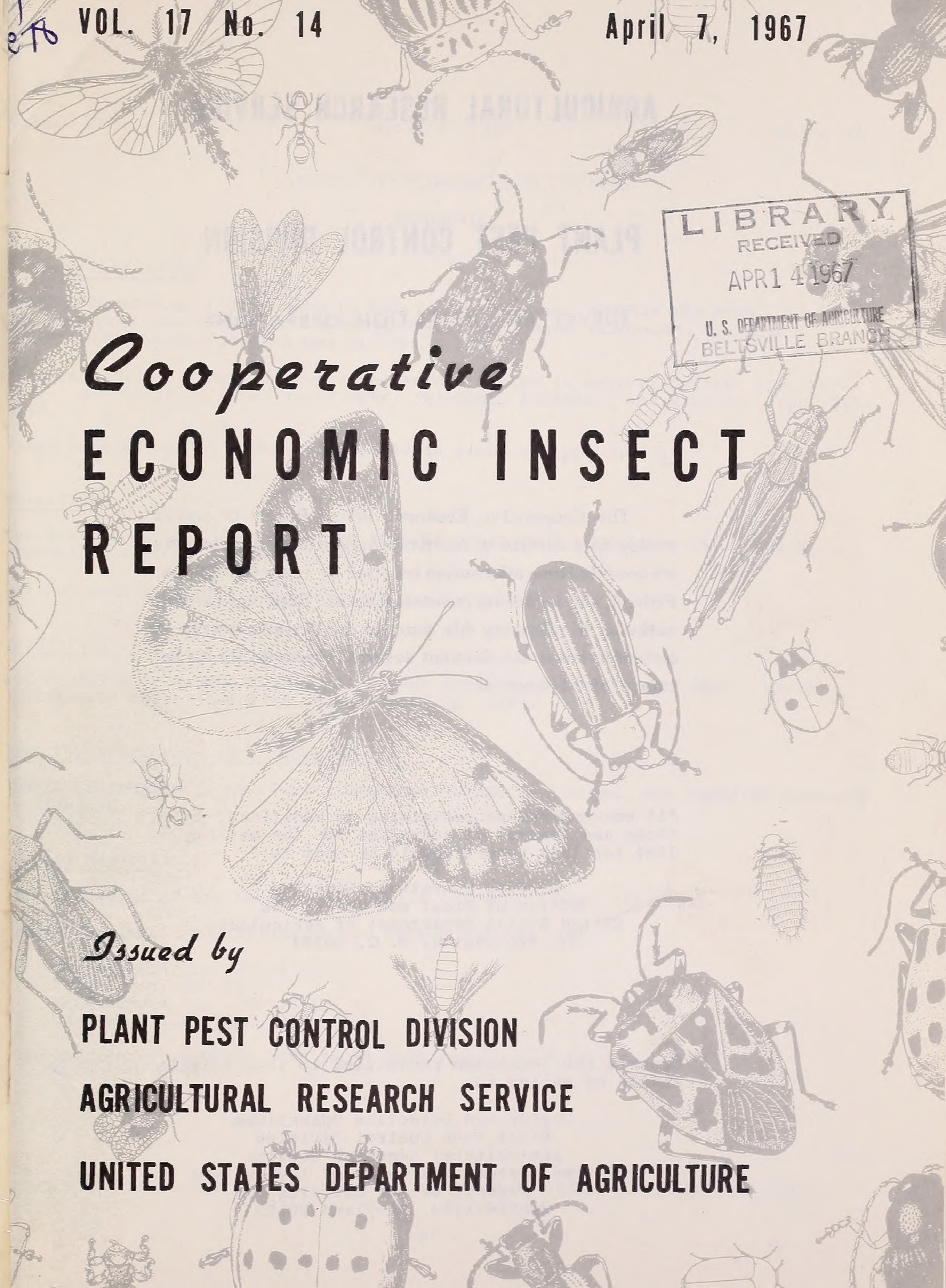
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

e78

VOL. 17 No. 14 April 7, 1967



LIBRARY
RECEIVED
APR 14 1967
U. S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All correspondence pertaining to additions, deletions and changes of addresses for the mailing list for this report should be sent to:

Service Operations Division
Office of Plant and Operations
United States Department of Agriculture
Washington, D. C. 20250

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 17 April 7, 1967 Number 14

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG diminishing in Texas, heavy in Noble County, Oklahoma. EUROPEAN CORN BORER numbers highest ever recorded in New Madrid County, during March in Missouri. (p. 241). BLACK CUTWORM destroyed seedling corn in Texas.(p.242).

ALFALFA WEEVIL is beginning to cause severe damage in several States. (pp. 242-243). PEA APHID is heavy in Arizona, Oklahoma, Arkansas, and Missouri. (pp. 243-244).

Heavy populations of PECAN PESTS noted in Alabama. (pp. 244-245).

Detection

New State records include SPOTTED ALFALFA APHID in Delaware (p. 241), and a PTEROMALID WASP in Oklahoma (p. 248).

For new county records see page 249.

Prediction

SUGAR-BEET ROOT MAGGOT adults may appear early in Colorado. (p. 244). Early GRASSHOPPER hatch indicated in Oklahoma. (p. 249).

Some First Occurrences of Season

CLOVER LEAFHOPPER in Delaware, ASPARAGUS BEETLE in Alabama, and TERMITES swarming in Michigan.

Special Reports

Identification of the Cereal Leaf Beetle (pictorial key). (p. 250).

Summary of Insect Conditions in the United States - 1966

- Ornamentals (pp. 253-255).
- Forest (pp. 256-259).
- Shade Trees (pp. 260-265).
- Man and Animals (pp. 265-271).

Distribution of EUROPEAN PINE SHOOT MOTH (map). (p. 272).

Reports in this issue are for week ending March 31 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....241

Insects Affecting

- Corn, Sorghum, Sugarcane.....241
- Small Grains.....242
- Turf, Pastures, Rangeland.....242
- Forage Legumes.....242
- Sugarbeets.....244
- Miscellaneous Field Crops.....244
- Cole Crops.....244
- Cucurbits.....244
- General Vegetables.....244
- Deciduous Fruits and Nuts.....244
- Citrus.....245
- Small Fruits.....245
- Ornamentals.....246
- Forest and Shade Trees.....246
- Man and Animals.....247
- Households and Structures.....247
- Stored Products.....248

Beneficial Insects.....248

Federal and State Plant Protection Programs.....248

Insect Detection.....251

Identification of the Cereal Leaf Beetle.....250

Hawaii Insect Report.....251

Light Trap Collections.....252

Summary of Insect Conditions in the United States - 1966

- Ornamentals.....253
- Forest.....256
- Shade Trees.....260
- Man and Animals.....265

Distribution of European Pine Shoot Moth (map).....272

WEATHER BUREAU'S 30-DAY OUTLOOK

APRIL

The Weather Bureau's 30-day outlook for April is for temperatures to average above seasonal normals from the central and southern Plains eastward to the Appalachians and also in the South Atlantic Coast States and the southern Rockies. Below normal temperatures are expected in California and the North Atlantic Coast States while near normal values are anticipated in unspecified regions. Precipitation is expected to exceed normal over the West Coast States and northern portions of the northern Plains. Subnormal totals are indicated from the central and southern Plains eastward to the East Coast extending northward to include New England. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

For weather of the week, see page 249.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - TEXAS - Populations diminishing on wheat in High Plains and Rolling Plains areas. Highest counts 2,000-5,000 per row foot in scattered eastern fields of Randall County. Averaged less than 250 per row foot with some heavy counts near Lazbuddie, Parmer County; sprays effective. (Daniels). OKLAHOMA - Moderate to occasionally heavy numbers present on small grains in many areas; heaviest in Noble County where greenbug "spots" present in some fields. (Okla. Coop. Sur.). ARKANSAS - Continues light in northwest area. (Ark. Ins. Sur.). MISSOURI - Ranged 14-400 per foot of row on all wheat in the extreme southeast area. Averaged 63 per foot of row on wheat in Pemiscot and New Madrid Counties. Also damaged malting barley. (Munson). KANSAS - Trace on wheat in Rush and Barton Counties. (Harvey). Trace, 0-5 per linear foot,in a few wheat fields in Douglas, Johnson, and Leavenworth Counties. (Simpson).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Moderate on barley in most areas of Maricopa and Pinal Counties. Controls not necessary. (Ariz. Coop. Sur.). NEVADA - Light to medium on barley in Moapa Valley, Clark County. Cool weather holding populations in check. (Zoller).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Moderate to heavy populations damaged alfalfa in Murray, Pontotoc, Seminole, and Coal Counties. Light, 5-10 per square foot in Noble County. (Okla. Coop. Sur.). ARKANSAS - Populations ranged 25-50 per square foot in northwest area. (Ark. Ins. Sur.). MISSISSIPPI - Very light on alfalfa in Pontotoc County. (Dinkins). DELAWARE - Collected on alfalfa by G. W. Angalet at St. Georges, New Castle County, September 1966 and at Dover and Smyrna, Kent County, December 1966. Det. by L. M. Russell. New State Record. (Burbutis, Leonard).

BEET LEAFHOPPER (*Circulifer tenellus*) - IDAHO - Preliminary surveys, February 27-March 10, 1967, indicate widespread host plant development (cotyledon stage) in Owyhee County; leafhopper averaged 0.29 per square foot. In Elmore County, counts averaged 0.01 in the Mountain Home area, 0.11 in the Sailor Creek area, and 0.07 in the Tuana Springs area. (Evans, Mar. 16).

POTATO PSYLLID (*Paratrioza cockerelli*) - ARIZONA - Nymphal populations increasing on potatoes in all areas of Maricopa County. Controls necessary and being applied. (Ariz. Coop. Sur.).

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) - MISSISSIPPI - Light on small grains; first generation has completed development and second generation is in second-instar stage. (Dinkins).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - KANSAS - Up to 5 larvae per square foot in Barton County wheat, controls applied. Ranged 4-8 per square foot in both established and seedling alfalfa in Riley and Clay Counties. (Simpson).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - DELAWARE - No pupae observed to date. (Burbutis). MARYLAND - Winter survival well above normal on the Eastern Shore. (U. Md., Ent. Dept.). MISSOURI - Abundance survey in New Madrid County showed an average of 3,200 borers per acre surviving. This is an overwintering reduction of 60 percent. Borer numbers are highest recorded for this area during March. (Keaster, Mar. 15).

SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) - MISSOURI - Winter survival in New Madrid County averaged 25 percent or 278 borers per acre. (Keaster, Mar. 15). ALABAMA - Winter survival of larvae was 30 percent in underground girdled stalks in a corn field in Morgan County during early March; no pupation occurred. Det. D. M. Weisman. (Estes).

BLACK CUTWORM (Agrotis ipsilon) - TEXAS - Heavy populations completely destroyed several fields totaling 4,500 acres of 1 to 3-inch corn in Fort Bend and Brazoria Counties. All were replanted and treated. (Neeb).

SMALL GRAINS

APPLE GRAIN APHID (Rhopalosiphum fitchii) - MISSOURI - Ranged 300-5,000 per foot of row on barley in southwest area; control underway. (Munson).

ENGLISH GRAIN APHID (Macrosiphum avenae) - KANSAS - Ranged 5-15 per linear foot on wheat in Shawnee and Jefferson Counties. (Simpson). OKLAHOMA - Present in most wheat fields checked in Noble County; ranged 1-10 per linear foot. (Okla. Coop. Sur.). MISSISSIPPI - Moderate on wheat in Oktibbeha and Webster Counties. Probably this species heavy on small grains in the delta area. (Dinkins).

CUTWORMS - COLORADO - Undetermined species damaged wheat in Washington County. (Doyle, Fitzsimmons).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Moderate to heavy infestations common throughout High Plains area. Most damage due to drought as mite is not seriously damaging small grains. (Daniels). OKLAHOMA - Populations low in most areas; highest in central and north-central counties. Ranged up to 500 per linear foot in scattered Noble County fields. Continued rains should cause further decrease; most eggs being laid are the white, oversummering type. (Okla. Coop. Sur.). KANSAS - Mites or evidence of their feeding, observed in all wheat checked in Ellis, Rooks, Graham, Trego, Rush, Barton, and Russell Counties. Ranged 5-500 per foot of row with largest populations in very poor, continuous wheat. (Harvey). Moderate to heavy in Sedgwick County with heaviest concentration south of Highway 54; damage evident. Light to moderate in Grant County, with light damage. (Simpson). COLORADO - Active on wheat in Boulder County. (Carter).

BANKS GRASSMITE (Oligonychus pratensis) - KANSAS - Damaged a wheat field in Trego County. (Harvey).

TURF, PASTURES, RANGELAND

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - MARYLAND - Larvae heavy in gamagrass planting near Beltsville, Prince Georges County. (U. Md., Ent. Dept.).

BURROWING STINK BUGS - ALABAMA - Adults of Panagaeus bilineatus and/or Tominotus communis heavy in a 3,000 square-foot lawn of centipede grass in Greenville, Butler County. These insects caused severe damage to peanuts in several southeastern counties in 1966. (Morgan, Ledbetter).

RHODES-GRASS SCALE (Antonina graminis) - TEXAS - Moderate and common on Rhodes grass throughout southern area. Ranged 1.5-3.9 scales per node and have doubled since February. A small ENCYRTID WASP (Neodusmetia sangwani) controlled 8.8-33 percent of the scales. (Schuster).

A GROUND PEARL (Margarodes meridionalis) - ALABAMA - Observed in turf in Bullock County. (Morgan, Ledbetter).

A CRANE FLY (Tipula sp.) - CALIFORNIA - Larvae heavy in pastures at Santa Rosa, Sonoma County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Larval counts in untreated alfalfa in Pontotoc County averaged 55-60 per square foot. Larvae averaged 50 per square foot in alfalfa that was flamed January 15. Larval counts on alfalfa in

Sunflower County averaged 60-75 larvae per square foot. (Dinkins). ARKANSAS - Collected in Boone, Lafayette, and Miller Counties for new county records. (Roberts et al.). MISSOURI - Survey of southeast area indicated larvae per 10 sweeps as follows: Pemiscot County - Ranged 210-560, averaged 336; New Madrid County - Averaged 122 and 340 in 2 fields; Scott County - Ranged 50-370, averaged 110 in 3 fields. Alfalfa ranged 6-9.75 inches high. Chemical controls applied in all 3 counties. (Munson). COLORADO - Adult-feeding punctures observed on alfalfa stems in Larimer County. (McLaughlin). NEVADA - None found in Douglas County alfalfa; weather cold. (Munk). ILLINOIS - Damage was severe in occasional fields in southeastern area. New fall seedings most severely affected. Some controls applied, but in general, treatments will be needed on most fields by April 10. Problem in southern 2-3 tiers of counties. (Armbrust et al.). VIRGINIA - On 4-inch alfalfa in Campbell County that had been flamed, average per 10 sweeps was 2 larvae and 5 adults with much damage visible. Averaged 6 larvae and 2 adults per 10 sweeps in Bedford, Charlotte, Prince Edward, and Appomattox Counties.(Isakson). Larvae medium, mostly second instar in Mechanicsville, Chesterfield, and Hanover Counties. (Innes). DELAWARE - Considerable increase of larvae over last period; averaged 7 per 10 stems in New Castle County and 13 per 10 stems in Kent and Sussex Counties. Alfalfa injury more noticeable in Sussex County where second and third instars were present. (Burbutis). NEW JERSEY - No activity noted to date. (Ins.-Dis. Newsltr.).

CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Larvae beginning to feed on red clover near Easton, Talbot County. ILLINOIS - Damage moderate in occasional clover fields in southeastern and southwestern area. (Moore, Kuhlman). WISCONSIN - First and second-instar larvae fed considerably on 1-inch alfalfa. (Wis. Ins. Sur.). KANSAS - Ranged 10-15 larvae per square foot of alfalfa in Shawnee and Jefferson Counties and 0-5 in Douglas, Johnson, and Leavenworth Counties. (Simpson).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larval infestations high in some crimson clover fields in Lowndes County; controls applied. (Mathews, Mar. 24).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Adult populations increasing on alfalfa of Yuma, Maricopa, and Pinal Counties. Larval counts remain high in Maricopa and Pinal Counties; some controls required. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Larvae 0-25 per 25 sweeps in Chaves County alfalfa. (Mathews).

VARIEGATED CUTWORM (Peridroma saucia) - NEW MEXICO - Damage not as severe on alfalfa in Chaves and Eddy Counties as two weeks ago. (Mathews, Campbell).

CUTWORMS - COLORADO - Unspecified species damaged alfalfa in Prowers County. (Doyle, Fitzsimmons).

PEA APHID (Acyrthosiphon pisum) - NEVADA - Populations low on alfalfa in Moapa Valley, Clark County. Numerous predators present. (Zoller). ARIZONA - Continues heavy in scattered areas of Yuma and Maricopa Counties; however, populations generally light to moderate. (Ariz. Coop. Sur.). NEW MEXICO - Very light in Chaves County alfalfa. (Mathews). OKLAHOMA - Extremely heavy in alfalfa along Black Bear Creek in Noble County; several fields treated. Ranged 200-400 per square foot on alfalfa in Washita County; moderate to heavy in Murray County and light in Alfalfa, Seminole, and Coal Counties. Averaged 325 per linear foot on Austrian winter field peas in Noble County. (Okla. Coop. Sur.). ARKANSAS - Heavy in alfalfa in Miller County. (Roberts). Populations continued same as last period in northwest area; ranged 100-200 per square foot in alfalfa and vetch. A few winged forms present. (Ark. Ins. Sur.). KANSAS - Averaged 45 per square foot on alfalfa in Shawnee County; ranged 200-250 per square foot in Jefferson County, 75-100 in Douglas County, and 10-25 in Johnson and Leavenworth Counties. (Simpson). MISSOURI - Ranged 430 per 10 sweeps in Pemiscot County to 60 per 10 sweeps in Scott County. (Munson). ILLINOIS - Averaged 87 per sweep in southwestern area clover fields and 3 per sweep in the southeastern district. (Moore). VIRGINIA - Light on alfalfa in Campbell, Bedford, Charlotte, Prince Edward, and Appomattox Counties; averaged 5-50 per 100 sweeps. (Isakson).

THRIPS - KANSAS - Unspecified species heavy on most alfalfa checked in northeast area. (Simpson).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Averaged 0-6 adults per 25 sweeps in Chaves County alfalfa. (Mathews). KANSAS - Occasional adult of L. lineolaris on alfalfa in Shawnee, Jefferson, and Douglas Counties. (Simpson). WISCONSIN - Overwintering L. lineolaris adults active. (Wis. Ins. Sur.).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - DELAWARE - First adults of season collected on alfalfa in Kent County. (Burbutis).

SUGAR BEETS

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Continues heavy on sugarbeets in scattered areas of Maricopa and Pinal Counties. Populations heaviest in western Maricopa County. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Increasing in small number of sugarbeet fields in Maricopa County. (Ariz. Coop. Sur.).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults may appear early this year as maggots are not as deep in soil as in spring of 1966. (Jenkins).

MISCELLANEOUS FIELD CROPS

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs increasing rapidly in safflower fields of Pinal and Maricopa Counties; averaged 150 per 100 sweeps. (Ariz. Coop. Sur.).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Larvae infested 1 percent of cabbages in commercial fields at Sanford, Seminole County. Controls less effective on older larvae. (Greene).

ROOT MAGGOTS (Hylemya spp.) - ALABAMA - Damaged onions and cabbage plantings in Cullman County. (Ledbetter, Pinkston).

CUCURBITS

MELON APHID (Aphis gossypii) - ARIZONA - Populations increasing and becoming widespread on cantaloups in Yuma County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

ASPARAGUS BEETLE (Crioceris asparagi) - ALABAMA - Adults emerged from hibernation in Lee County and oviposition is occurring in new asparagus stems. (Leeper et al.).

DECIDUOUS FRUITS AND NUTS

Pecan Pests in Alabama - Archips argyrospilus larvae heavy on new growth of 3 apple orchards at Tallapoosa and causing considerable damage; controls applied. Pest not normally serious on apples in State. (Webb, Hagler, Ledbetter). Over 90 percent of Laspeyresia caryana larvae had pupated in pecan shucks examined in Barbour County; few adults had emerged. Acrobasis caryae larvae active and feeding on new growth of earlier pecan varieties in Lee County. A heavy infestation was observed in Barbour County, with 50 percent of larvae boring into the new growth. (Leeper et al).

A GELECHIID MOTH (Symmoca signatella) - CALIFORNIA - Larvae heavy on pecan trunks in Hanford, Kings County. (Cal. Coop. Rpt.).

WOOLLY APPLE APHID (Eriosoma langerum) - ALABAMA - Beginning to occur in bark depressions of apple trees throughout State. (McQueen).

BLACK PECAN APHID (Myzocallis caryaefoliae) - ALABAMA - Occurring in very light numbers on new growth of a few isolated pecan trees in Lee and Barbour Counties. (Leeper et al).

BLACK PEACH APHID (Brachycaudus persicaecola) - CALIFORNIA - Nymphs and adults heavy on peach rootstock in nursery at Chico, Butte County. (Cal. Coop. Rpt.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Economic on unsprayed peach trees at Gainesville, Alachua County. Most scales have gone from crawler stage to first sedentary stage. (Kuitert).

ITALIAN PEAR SCALE (Epidiaspis piricola) - CALIFORNIA - Medium on apricot in Visalia, Tulare County. (Cal. Coop. Rpt.).

CITRUS

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increasing on citrus in Yuma and Maricopa Counties and causing moderate to heavy damage; controls applied to protect new fruit crops. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Heavy on weed hosts in citrus groves and on new citrus terminals in Yuma County. (Ariz. Coop. Sur.).

COWPEA APHID (Aphis craccivora) - ARIZONA - New infestations continue to be found in citrus blocks in Yuma County. Damage light to moderate on terminals. One young grove treated. (Ariz. Coop. Sur.).

CALIFORNIA RED SCALE (Aonidiella aurantii) - TEXAS - Light throughout most of the Rio Grande Valley area. (Stephens).

BROWN SOFT SCALE (Coccus hesperidum) - TEXAS - Moderate on unsprayed home citrus trees in Rio Grande Valley. Most commercial groves free of pest. (Stephens).

FLAT MITE (Brevipalpus lewisi) - ARIZONA - Very heavy in citrus groves not treated last year in Yuma County. Controls required in many groves. (Ariz. Coop. Sur.).

SMALL FRUITS

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) - MARYLAND - Active on old strawberry planting at Glendale, Prince Georges County. (U. M., Ent. Dept.).

A LEAFHOPPER (Erythroneura sp.) - ARIZONA - Nymphs heavy on backyard grape plantings in Yuma, Yuma County. (Ariz. Coop. Sur.).

ORNAMENTALS

APHIDS - CALIFORNIA - *Dysaphis tulipae* medium on lily nursery stock in Capitola, Santa Cruz County. *Rhopalosiphum padi*, *Macrosiphum euphorbiae*, and *Acyrthosiphon pisum* were medium on hydrangea and weigela nursery stock at Fresno, Fresno County. (Cal. Coop. Rpt.). ARIZONA - *Macrosiphum rosae* very heavy on rose bushes in eastern Maricopa County; light in other areas of county. Heavy populations of *Aphis nerii* damaged new terminals of oleander in Yuma, Pinal, and Maricopa Counties. (Ariz. Coop. Sur.). TEXAS - *Cinara tujafilina* heavy on roots and foliage of arborvitae; several shrubs killed in Borger, Hutchinson County. (Dollinger).

ARMORED SCALES - CALIFORNIA - *Hemiberlesia rapax* and *Aspidiotus camelliae* heavy on all parts of heather at Mission Beach. *H. rapax* heavy on loquat in La Jolla, San Diego County. *Aspidiotus nerii* heavy on acuba plants locally in Glenn, Glenn County. (Cal. Coop. Rpt.).

BROWN SOFT SCALE (*Coccus hesperidum*) - CALIFORNIA - Heavy on leaves of schefflera plants in San Francisco, San Francisco County. (Cal. Coop. Rpt.).

PRAIRIE TENT CATERPILLAR (*Malacosoma lutescens*) - KANSAS - Large numbers of early-instar larvae of probably this species, feeding on cherry and plum in Clark and Meade Counties; ranged 1-10 nests per shrub. (Thompson).

GLADIOLUS THRIPS (*Taeniothrips simplex*) - FLORIDA - Adults infested 100 imported gladiolus bulbs at garden center, Winter Haven, Polk County. (Eisenschenk, Mar. 16).

BOXWOOD LEAF MINER (*Monarthropalpus buxi*) - VIRGINIA - Medium on American boxwood in Chesterfield, Henrico, Hanover, Goochland, and Charlotte Counties. (Innes).

SPIDER MITES - FLORIDA - *Eutetranychus banksi* adults infested 25 percent of 400 camellia plants at a nursery in Seffner, Hillsborough County. This is a new host record. (Simmons et al.). ARIZONA - *Oligonychus ununguis* caused heavy damage to ornamental evergreens at Yuma, Yuma County. *O. platani* damaged pyracantha at Yuma. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

FALL CANKERWORM (*Alsophila pometaria*) - MICHIGAN - Adult flights recorded in Livingston and Ingham Counties, March 25 and 26 when temperatures were in high 60's. (Newman, Turk).

TENT CATERPILLARS (*Malacosoma* spp.) - ILLINOIS - Small nests of *M. americanum* observed in southeastern area. (White). FLORIDA - Late-instar *M. disstria* larvae on oak at Gainesville, Alachua County. (Hetrick).

SOFT SCALES - CALIFORNIA - *Ehrhornia cupressi* heavy on cypress in Fresno, Fresno County. *Saissetia coffeae* locally heavy on deodar cedar at San Francisco, San Francisco County. (Cal. Coop. Rpt.).

APHIDS - NEW MEXICO - *Cinara* sp. problem on ponderosa pine in Albuquerque area, Bernalillo County. (Kloepfer). TEXAS - *Longistigma caryae* heavy on live oaks throughout Dallas, Dallas County. (Millican).

BOXELDER BUG (*Leptocoris trivittatus*) - TEXAS - Moderate on boxelder trees at Del Rio, Val Verde County. (Tatum).

A SPIDER MITE (*Oligonychus subnudus*) - CALIFORNIA - Eggs and adults heavy on pine in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

MOSQUITOES - NEW MEXICO - Probably *Culex tarsalis* larvae in southern Dona Ana County. *Culiseta inornata* larvae appearing 3-4 weeks earlier than usual in some breeding areas. (Doll). LOUISIANA - Larval collections in Jefferson Parish consisted of *Aedes triseriatus*, *A. vexans*, *Anopheles quadrimaculatus*, *Culex restuans*, and *C. salinarius*. Adult activity lowest on record; 17 light traps averaged 1.4 adults per night. (Simpson). MINNESOTA - Overwintering adults of *Culex* sp. noted in St. Paul area. (Minn. Ins. Rpt., Mar. 24). MARYLAND - Early instars of *Aedes* spp. observed at several locations in southern area. (U. Md., Ent. Dept.).

A BITING MIDGE (*Culicoides niger*) - FLORIDA - Adults annoying people during twilight at Gainesville, Alachua County. (Mead).

HOUSE FLY (*Musca domestica*) - WISCONSIN - Overwintering adults active. (Wis. Ins. Sur.).

BLACK WIDOW SPIDER (*Latrodectus mactans*) - IDAHO - Found in basements of a few homes in Twin Falls County. (Peay, Feb. 1).

HORN FLY (*Haematobia irritans*) - OKLAHOMA - Ranged 40-50 per head on cattle in McIntosh County and 10-20 per head in Payne County. (Okla. Coop. Sur.). ARKANSAS - Appearing in northwest area; averaged 5-10 per head in southwest area. (Simco, Roberts). MISSISSIPPI - Infestations increased rapidly; approximately 115-200 flies per head on 50 black angus cows in Oktibbeha County. (Dinkins).

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U. S. March 26-April 1. Total of 23 cases reported in portion of Barrier Zone in Republic of Mexico March 19-25 as follows: Territorio sur de Baja California 6, Sonora 13, Tamaulipas 4. Four cases in Mexico south of Barrier Zone. Barrier Zone is area where eradication operations are underway to prevent establishment of self-sustaining population in U. S. Sterile screw-worm flies released March 26-April 1: Texas 168,000, Mexico 101,430,000. (Anim. Health Div.).

CHICKEN BODY LOUSE (*Menacanthus stramineus*) - ARKANSAS - Few infested flocks have heavy infestations. (Simco).

ROCKY MOUNTAIN WOOD TICK (*Dermacentor andersoni*) - COLORADO - Active in foothill areas of Larimer County. (Hantsbarger).

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) - ARKANSAS - Few infested flocks have heavy infestations. (Simco).

HOG LOUSE (*Haematopinus suis*) - TEXAS - Moderate to heavy on hogs near Giddings, Lee County. Numbers increased during winter. (Spivey).

HOUSEHOLDS AND STRUCTURES

TERMITES - UTAH - Subterranean termite infestations increasing in Salt Lake County during recent months. (Burningham, Knowlton). OKLAHOMA - *Reticulitermes* spp. swarming in Oklahoma and Bryan Counties after rain last period. (Okla. Coop. Sur.). MICHIGAN - Unspecified species swarming in Jackson County. First record of swarming adults for the season. (Cooper).

A PSYCHID MOTH (*Apterona crenulella*) - IDAHO - Tiny larvae in spiral mud tubes at Boise, Ada County, home. (Peterson, Nov. 1). Skeltonized alfalfa in June, 1966, at Roswell, Canyon County. (O'Keeffe).

CARPET BEETLE (*Anthrenus scrophulariae*) - WISCONSIN - Overwintering adults active. (Wis. Ins. Sur.).

BOXELDER BUG (*Leptocoris trivittatus*) - UTAH - Invaded schoolrooms and homes at Logan, Cache County. (Knowlton).

CLOVER MITE (*Bryobia praetiosa*) - UTAH - Infestations more common than normal in Salt Lake County. (Burningham, Knowlton).

STORED PRODUCTS

POTATO TUBERWORM (*Phthorimaea operculella*) - TEXAS - Heavy on stored sweetpotatoes near Pittsburg, Camp County. (Cates).

FLOUR BEETLES (*Tribolium* spp.) - MINNESOTA - *T. castaneum* and *T. confusum* infested food products in homes, primarily in the Minneapolis and St. Paul area. (Minn. Ins. Rpt.).

GRANARY WEEVIL (*Sitophilus granarius*) - MINNESOTA - Infested shelled corn in Lyon County. (Minn. Ins. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Light on alfalfa in Eddy and Chaves Counties. (Mathews). OKLAHOMA - Up to 6 *Hippodamia convergens* larvae per linear foot in greenbug-infested wheat in Noble County. Adults and pupae occasionally observed. Ranged 2-8 per linear foot of wheat in southern area. (Okla. Coop. Sur.). KANSAS - Various species moderate on numerous pea aphids in alfalfa. (Simpson). MISSISSIPPI - Adults and larvae active in small grains. (Dinkins). WISCONSIN - *Adalia bipunctata* overwintering adults active. (Wis. Ins. Sur).

A PTEROMALID WASP (*Asaphes lucens*) - OKLAHOMA - Reared from turnip aphid collected at Bixby, Tulsa County, on November 15, 1966. Det. by O. Peak. New State record. (Okla. Coop. Sur.).

HONEY BEE (*Apis mellifera*) - WISCONSIN - Overwintering adults active. (Wis. Ins. Sur.).

DAMSEL BUGS - NEW MEXICO - Light on alfalfa in Eddy and Chaves Counties. (Mathews).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GYPSY MOTH (*Porthetria dispar*) - Results of egg mass survey positive in Queens, New York; Atlantic, Burlington, Camden, Ocean, and Warren Counties, New Jersey, (PPC East. Reg., Feb. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - TEXAS - Larvae collected in two species of wild hibiscus in Calhoun County. (PPC South. Reg., Feb. Rpt.).

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - ALABAMA - Medium population of larvae destroyed a stand of newly set tomatoes in a 0.5-acre field in Geneva County. (Reynolds, Stephenson).

BOLL WEEVIL (*Anthonomus grandis*) - TEXAS - Hibernation survey conducted in Foard and Wilbarger Counties showed 56 percent fewer overwintering weevils this year than last. Trash survey was completed below the Caprock on February 17; 1 live adult collected from untreated area in Dickens County. (PPC South. Reg., Feb. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Swarmed heavily from crack in concrete slab floor of motel laundry room, in spite of treatment prior to construction in 1965, at Tampa, Hillsborough County. (Fla. Coop. Sur., Mar. 14).

ORIENTAL FRUIT FLY (Dacus dorsalis) - CALIFORNIA - Inspection of 1,765 traps negative; it has been 8 weeks since the last positive collection in Fullerton. Recent warm weather should have produced adults if an infestation is present. (Cal. Coop. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - One adult was collected in Cameron County; collections were negative in several other counties. (PPC South. Reg., Feb. Rpt.).

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae collected from several hosts in Manatee, Sarasota, and Dade Counties. Adults collected in traps in Manatee, Sarasota, and Pinellas Counties. (Fla. Coop. Sur.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Treatment continues in San Diego area; approximately a third of the area or 592 blocks have been treated. In Bakersfield, Kern County, host plants written 1 mile of infestation have been inspected; not over 30-35 blocks will require treatment. (Cal. Coop. Rpt.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Inspections were made on 2,922 citrus trees an 11 properties in 5 municipios. Light infestations were found on 2,344 trees. (PPC Mex. Reg., Feb. Rpt.).

WEATHER OF THE WEEK ENDING APRIL 3

HIGHLIGHTS: Substantial rains fell in parts of the central and northern Plains. It was unusually warm over the eastern half of the Nation.

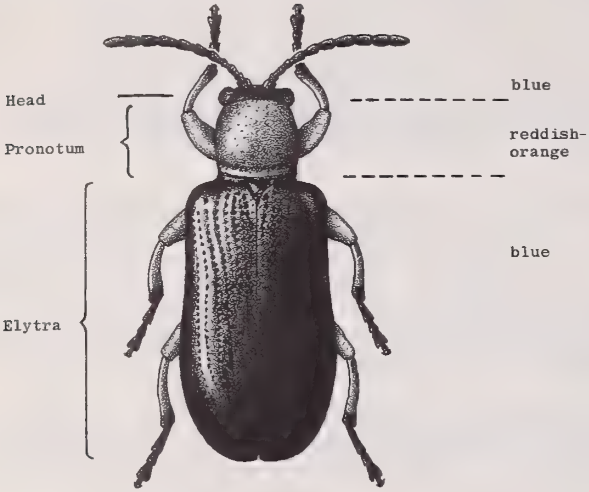
PRECIPITATION: Thunderstorms dropped generous precipitation over much of the Corn Belt during the past week, with totals exceeding 3 inches from northeastern Kansas to west-central Illinois. Two inches or more fell in southern Minnesota and northern Iowa. Most of the Nation's northeast quarter received light rains. Arkansas and Louisiana received no rain or only light sprinkles and other southeastern areas generally light showers. The western edge of the central and southern Plains received no rain, and strong winds on one or two days raised dust clouds in eastern Colorado and western Kansas. Light rain fell along the coast in the Pacific Northwest, with snow in the foothills and mountains. By the weekend the rains had spread southward, reaching the desert in California. Up to 6 inches of snow fell above 6,000 feet in northern Arizona Wednesday; Flagstaff received 8 inches in the afternoon.

TEMPERATURE: Temperatures averaged below normal over the Pacific Coast States, the Great Basin, and Montana. Elsewhere over the Nation they were above normal. It was the 5th warm week from Oklahoma and Texas to the Carolinas and Georgia. Wide areas from eastern New Mexico and central Texas northeastward to the Great Lakes and northern Vermont averaged more than 10° warmer than normal. Southerly winds brought afternoon temperatures to the 80's over the Great Plains early in the week and to the East by Sunday. Bismarck, North Dakota, registered 80° Wednesday afternoon and 30° a few hours later after a cold front passage. By the end of the week, the cold had advanced to the central Plains, the Ohio River Valley, and the eastern Great Lakes. (Summary supplied by Environmental Data Service, ESSA).

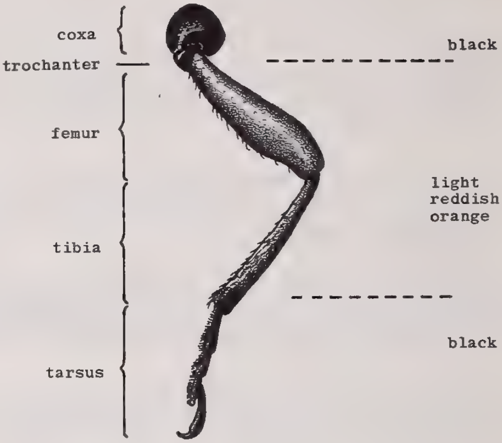
IDENTIFICATION OF THE CEREAL LEAF BEETLE, *Oulema melanopus* (L.)

ADULT

The adult is readily recognized by the body shape and the color pattern of the dorsal surface and legs. No other North American beetle duplicates this combination of characters.



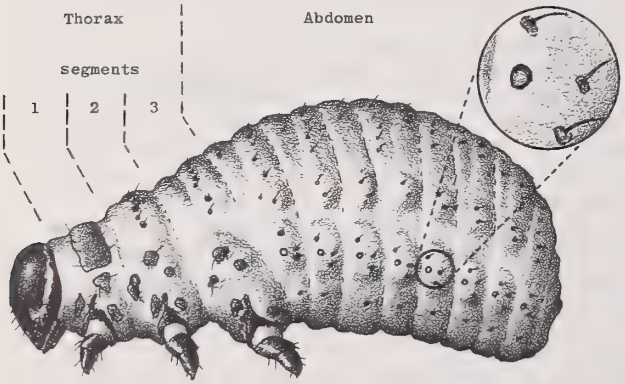
The head and pronotum are narrower than the elytra (the latter bear rows of punctures), note also the blue, reddish-orange, and blue color combination of the body.



The coxa is closely applied to the body. Each leg has the black, reddish orange, and black color combination.

LARVA

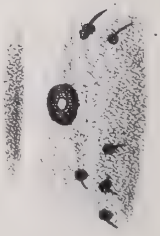
The larva is fat-bodied and broadest at about the middle of the abdomen. It can be distinguished from other larvae of similar shape by the nature of the sclerites at the side of the thoracic segments and the form of any one of the abdominal spiracles and the surrounding tubercles.



Each abdominal segment at its side has a moderate-sized spiracle and 3 tubercles (each with a seta) behind and about equidistant from the spiracle.

Each thoracic segment at its side has (respectively) 3, 5, and 5 small, often triangular, sclerites surrounding the base of a leg.

Larvae of species of the genus Lema are similar in body shape but have the thoracic sclerites different, and have the abdominal spiracles larger in comparison with the tubercles, and the latter arranged differently; see example.



U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
17(14):250, 1967.

Richard E. White
Entomology Research Division
ARS, USDA
Washington, D.C.

HAWAII INSECT REPORT

Turf - Adults of a BILLBUG (*Sphenophorus venatus vestitus*) light on tifdwarf greens on gulf course in Kalapaki, Kauai. (Au).

Beans - Adults of a PLATASPID BUG (*Coptosoma xanthogramma*) medium on snap beans in Kaneohe, Oahu; adult damage negligible. (Shinbara). All stages of SOUTHERN GREEN STINK BUG (*Nezara viridula*) light to medium on 0.25 acre of yardlong beans and 1.25 acres of snap beans in Waimanalo, Oahu. (Sato).

Fruits - PURPLE SCALE (*Lepidosaphes beckii*) and GREEN SCALE (*Coccus viridis*) very heavy on citrus foliage and stems in Kihei, Maui. (Miyahira).

Ornamentals - RED AND BLACK FLAT MITE (*Brevipalpus phoenicis*) caused severe defoliation (50-75 percent) and dieback to *Ligularia* sp. in Lihue area, Kauai. (Au).

Forest and Shade Trees - Adults and nymphs of a PSYLLID (*Psylla uncatoides*) medium on Formosa koa. Adults light, 2 per sweep, on Formosa koa and *Acacia koa* in Kaliki Valley and in Nuuanu Valley. Det. by L. D. Tuthill. Several adults collected between March and June 1966 in light traps in Honolulu constituted the first record of this pest in the State. (Funasaki, Suzukawa). Several larvae of a CERAMBYCID BEETLE (*Phoracantha semipunctata*) collected from swamp mahogany in Manoa, Oahu, in January 1967; adults emerged in mid-March. This beetle was first reported in the State in February 1965. Additional adults have been collected in buildings at various locations on Oahu. Swamp mahogany constitutes the first host record of this beetle in Hawaii. (Davis).

Miscellaneous Pests - Very heavy buildup of VAGRANT GRASSHOPPER (*Schistocerca vaga*) adults and nymphs occurred on weed hosts in vacant lots in Waianae, Oahu. Adults reported in farming areas, but damage to crops negligible. (Otsuka, Au, Wong). No significant increase of RED-SHOULDERED STINK BUG (*Thyanta accerra*) noted in Nanakuli, Oahu; population remains at trace levels on weeds. Few adults found on swollen-finger grass (*Chloris inflata*) in Waianae. This is most northerly spread on leeward side of the island. (Funasaki, Au). GIANT AFRICAN SNAIL (*Achatina fulica*) continues active in many areas due to heavy rains, especially on Maui. Heavy populations of GARDEN SNAIL (*Bradybaena similaris*) and BLACK SLUG (*Veronicella leydigi*) noted in residential areas of Lahaina, Maui. (Miyahira).

INSECT DETECTION

New State Records

A PTEROMALID WASP (*Asaphes lucens*) - OKLAHOMA - Collected from turnip aphid in Tulsa County. Det. by O. Peck. (p. 248).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - DELAWARE - Collected on alfalfa by G. W. Angalet in New Castle County, September 1966, and Kent County, December 1966. Det. confirmed by L. M. Russell. (p. 241).

New County Records

ALFALFA WEEVIL (*Hypera postica*) - ARKANSAS - Collected in Boone, Lafayette, and Miller Counties. (p. 243).

LIGHT TRAP COLLECTIONS

	Tempera- ture °F.	Precip- itation (inches)	Type of trap BL = blacklight I = incandescent MV = mercury vapor O = other	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Gainesville 3/28			BL				1		2											2				
MISSISSIPPI																								
Rolling Fork 3/15-3/31		2.00	BL	6			11		1		1							3	18	44				
Stoneville 3/15-31	30-83	2.16	2BL	31			35		3		2							57	144	171				
Tunica 3/15-31		1.20	BL	5			3		3									16	14	21				
SOUTH CAROLINA																								
Charleston 3/27-4/2	48-84	0	BL						5											5				
TEXAS																								
Brownsville 3/25-31	63-86	Trace	2BL	7					33		7								1	5	1		7	
Waco 3/25-31			BL	3			11		27		27							3	1	19	4			

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1966

(continued from page 236)

ORNAMENTAL INSECTS

Highlights:

BAGWORM continued as a serious pest of ornamental evergreens in several States. Several WEEVILS damaged ornamentals in scattered areas this season. ROSE CHAFER was abundant in Maine, Connecticut, and Rhode Island. APHIDS, WHITEFLIES, SCALE INSECTS, and MITES were quite troublesome in many areas of the Country. Several species were reported as new State and county records this season.

JUNIPER WEBWORM (Dichomeris marginella) increased on juniper in western OREGON. AILANTHUS WEBWORM (Atteva aurea) caused more webbing and browning of ailanthus leaves than in the past 6 or 7 years in ILLINOIS. ARBORVITAE LEAF MINER (Argyresthia thuiella) was heavy in New Castle County, DELAWARE. A few adults were collected at nurseries in RHODE ISLAND during May. It was not economically important. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) larvae caused heavy damage to ornamental shrubs in Ormsby County, NEVADA. CUTWORMS damaged peonies, iris, and tulips in VERMONT. STALK BORER (Papaipema nebris) infested chrysanthemums in a field plot in PENNSYLVANIA; infestation was light. GRANULATE CUTWORM (Feltia subterranea) caused serious losses to ornamentals and lawns during the spring and summer in Maricopa and Pinal Counties, ARIZONA. EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) infested Tanyoshi pine in a Multnomah County, OREGON, nursery this year; all pines on the property subject to infestation were fumigated or destroyed. NANTUCKET PINE TIP MOTH (R. frustrana) infested pines in many nurseries in the eastern half of NEBRASKA. (Distribution map of R. buoliana, p. 272).

BAGWORM (Thyridopteryx ephemeraeformis) damaged coniferous shrubs throughout ALABAMA, and continued heavy in ARKANSAS, especially in the northwest area. Bagworm was moderate to heavy and caused considerable damage to evergreens in most areas of OKLAHOMA. It was the most serious pest on ornamental pines in KANSAS. Larvae were observed in June, July, and September. Ornamentals were heavily damaged throughout MISSOURI. Bagworm was found on various shipments of evergreens coming into MINNESOTA; this pest not known to overwinter in the State, however. Larvae caused browning of evergreens and a few deciduous trees throughout the southern two-thirds of ILLINOIS. Populations heavily damaged arborvitae and juniper plantings on many properties in Montgomery and Prince Georges Counties, MARYLAND. Bagworm was widely distributed and caused more injury this year than in most recent years in DELAWARE.

A PLUME MOTH (Platyptilia pica monticola) was not as severe on geraniums and pelargoniums as in past years in CALIFORNIA. Migrating larvae of WHITE-LINED SPHINX (Celerio lineata) destroyed ornamentals in many communities throughout the southern half of ARIZONA. A LEAF ROLLER MOTH (Argyrotaenia cockerellana) damaged ornamental junipers at Reno, NEVADA, in late May and early June; adults began emerging in late May. SPRUCE BUDWORM (Choristoneura fumiferana) infested ornamental spruce trees in Livingston, Bozeman, Big Timber, and other towns in western MONTANA. Infestations were lower in 1966 than in 1965.

BLACK VINE WEEVIL (Brachyrhinus sulcatus) and another WEEVIL (B. meridionalis) injured several hosts in Washoe County, NEVADA, with damage increasing as the season progressed. Damage to Taxus spp. has become a serious problem in nurseries and landscapes in many sections of OHIO, where larval damage to roots was reported through June. Adults emerged and fed on taxus leaves from mid-June through mid-September. Most serious damage to the plants resulted from larvae feeding on the roots. Black vine weevil was more abundant and widespread than in the past few years in CONNECTICUT, but remained about the same in nurseries and ornamental plantings in RHODE ISLAND. STRAWBERRY ROOT WEEVIL (B. ovatus) adults caused flagging of terminal growth of established arborvitae in the Minneapolis and St. Paul area of MINNESOTA during the summer. A WEEVIL (B. cribricollis) damaged privet and roses in Clark County, NEVADA, during September and October. FULLER ROSE BEETLE (Pantomorus cervinus) was a problem on gardenia at a few locations in CALIFORNIA.

WHITE GRUBS (Phyllophaga spp.) were troublesome on nursery stock in MINNESOTA. ROSE CHAFER (Macrodactylus subspinosus) was abundant during the season throughout CONNECTICUT and PENNSYLVANIA, and damaged roses at Auburn, MAINE, during June. Rose chafer was the most abundant scarab in RHODE ISLAND. ASIATIC GARDEN BEETLE (Maladera castanea) caused heavy damage to Canadian hemlock at Bristol, Rhode Island. ELM LEAF BEETLE (Pyrrhalta luteola) was the most severe pest of ornamentals in TEXAS during 1966. Extremely heavy populations existed on elms throughout the north and northwest areas of the State, with damage heavier than in the past few years. A BARK BEETLE (Xylosandrus compactus) has become more of a pest in FLORIDA, especially on dogwood.

TULIP BULB APHID (Dysaphis tulipae) and an APHID (Rhopalosiphoninus staphyleae) were abundant on tulip bulbs and iris in storage in Pierce County, WASHINGTON. SPRUCE APHID (Elatobium abietinum) caused heavy needle damage to improperly treated ornamental spruce in home gardens and nurseries of Multnomah County, OREGON. RUSTY PLUM APHID (Hysteroneura setariae) damaged ornamentals throughout ARIZONA during late spring, and CHRYSANTHEMUM APHID (Macrosiphoniella sanborni) seriously damaged flowers and ornamentals during the spring in central and western Arizona. APHIDS were a problem on roses, chrysanthemums, and other ornamental flowers in all areas of NEW MEXICO. POTATO APHID (Macrosiphum euphorbiae) damaged roses and iris in many areas of OKLAHOMA during late April and early May. An APHID (Aphis pseudohederae) was very heavy on English ivy in New Castle County, DELAWARE. APHIDS were abundant on roses in PENNSYLVANIA.

A MEALYBUG (Trionymus diminutus) was a normal pest of New Zealand flax in CALIFORNIA. Another MEALYBUG (Pseudococcus microcirculus) was a pest of orchids in northern California, and LONG-TAILED MEALYBUG (P. adonidum) was more prevalent and widespread in the State. A MEALYBUG (Rhizoecus prichardii) heavily infested 300 pots of African-violet in a greenhouse in Schuylkill County, PENNSYLVANIA. EASTERN SPRUCE GALL APHID (Adelges abietis) and COOLEY SPRUCE GALL APHID (A. cooleyi) were normally abundant on ornamentals, but abundance increased on Christmas trees in CONNECTICUT. Controls for eastern spruce gall aphid were ineffective in PENNSYLVANIA. A PSYLLID (Psylla uncatoides) was severe on albizzia and acacia in some locations in CALIFORNIA. In RHODE ISLAND, very heavy infestations of a WHITEFLY (Aleurotuberculatus similis) were observed on Japanese holly in Kingston. Another WHITEFLY (probably Dialeurodes chittendeni) was very heavy on rhododendron at Richmond, and AZALEA WHITEFLY (Pealius azaleae) occurred statewide. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was more general and heavier than ever observed in greenhouses in western PENNSYLVANIA. CITRUS WHITEFLY (D. citri) was the number one insect pest of ornamentals in FLORIDA. Greenhouse whitefly caused some damage to ornamentals in coastal areas of CALIFORNIA.

A COREID BUG (Mozena obtusa) infestations were heavy in the High Plains and Rolling Plains areas of TEXAS, principally on mimosa. This insect is quite common on mesquite and thrives best under dry, arid conditions which had been created throughout this area by a rather sustained drought. This bug was heavy on mimosa and peach trees during July in southwest KANSAS and had not previously been reported in the State. CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) was severe on Indian-fig along the coast in southern CALIFORNIA. GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) caused some damage to ornamentals in coastal areas of California. LEAFHOPPERS were a problem on ornamentals throughout MONTANA. EUROPEAN EARWIG (Forficula auricularia) populations in gardens and home areas were greater in western OREGON than in 1965, and some dahlia growers reported losses due to flower damage by earwigs.

EUONYMUS SCALE (Unaspis euonymi) was serious on home plantings of euonymus in Albuquerque, NEW MEXICO, and heavy in OKLAHOMA, where 5 generations occurred during 1966. Euonymus scale was a frequent problem on euonymus and bittersweet in MARYLAND, continued heavy on euonymus in many areas of DELAWARE, and was very common on euonymus and pachysandra in CONNECTICUT. CACTUS SCALE (Diaspis echinocacti) was heavy on cactus in several greenhouses in PENNSYLVANIA. OYSTERSHELL SCALE (Lepidosaphes ulmi) was very common on lilac, apple, and willow in CONNECTICUT and RHODE ISLAND. Populations were evident on cotoneaster at Ellendale, NORTH DAKOTA. Although properly timed and applied control measures are effective against oystershell scale, heavy damage and new infestations occur yearly on lilac and cotoneaster in all areas of WYOMING. This scale insect was found on poplar in Goshen County for the first time. OLIVE SCALE (Parlatoria oleae) infested privet and ornamentals at a few locations in CALIFORNIA, while OLEANDER SCALE (Aspidiotus nerii) was more of a nuisance on ornamentals than in past years.

TEA SCALE (Fiorinia theae) was the most destructive and widespread scale on camellia and Burford hollies in ALABAMA. WHITE PEACH SCALE (Pseudaulacaspis pentagona) and an ARMORED SCALE (Phenacaspis cockerelli) were more of a problem in 1966 than in 1965 in FLORIDA, and FLORIDA RED SCALE (Chrysomphalus aonidum) continued as one of the worst pests on several ornamentals in the State. Infestations of SOFT SCALES (Pulvinaria spp.) were abundant on dogwood, pyracantha, and rose-of-Sharon at numerous locations in MARYLAND. FLETCHER SCALE (Lecanium fletcheri) was common on yews in CONNECTICUT, and trace numbers were present on arborvitae at Valley City, Jamestown, and Grand Forks, NORTH DAKOTA. Fletcher scale infested arborvitae at Chester, MONTANA, during 1966. A SOFT SCALE (Toumeyella pinicola) infested ornamental pine trees in a few widely separated areas of CALIFORNIA, and HEMISPHERICAL SCALE (Saissetia coffeae) was primarily a problem in San Diego County. COTTONY-CUSHION SCALE (Icerya purchasi) occurred on acacia trees and some ornamentals that serve as reservoirs for vedalia (Rodolia cardinalis). Numerous cottony-cushion scale infestations were reported on ornamentals throughout the year in areas of Yuma, Maricopa, Pinal, and Gila Counties, ARIZONA.

PEAR-SLUG (Caliroa cerasi) larvae were abundant and caused severe browning on some hawthorn trees in northern ILLINOIS by July 14. ROSE-SLUG (Endelomyia aethiops) severely damaged rose bushes at Valley City, NORTH DAKOTA. Rose-slug appeared wherever roses were grown in MONTANA, and pear-slug infested cotoneaster and other trees and shrubs throughout the State.

First NARCISSUS BULB FLY (Merodon equestris) adults of the season were collected on King County, WASHINGTON, July 9. NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) larvae mined foliage of American holly in all sections of MARYLAND during the spring and were heavy this year in American holly in DELAWARE. Native holly leaf miner was normal on holly in RHODE ISLAND, and a LEAF MINER FLY (Phytomyza sp.) damaged leaves of inkberry in a nursery at Wakefield. A GALL WASP (Diplolepis polita) damaged roses at a few locations in CALIFORNIA. Populations were more prevalent in the State this year.

SPIDER MITES (Tetranychus spp.) were heavy during early summer and caused extensive damage to ornamentals throughout much of ARIZONA. T. marianae was confined to nightshade in southern CALIFORNIA. Spider mites were heavy on many ornamentals including deciduous shrubs, flowers, juniper, and spruce throughout NEVADA from mid-April through early November. Infestations, similar to 1965, continued to cause moderate to severe damage on ornamental evergreens in WYOMING. Populations increased in late August and September. SPRUCE SPIDER MITE (Oligonychus ununguis) was heavy, causing discoloration to many ornamental junipers throughout KANSAS during late spring and summer, and was very heavy on spruce early in the season in PENNSYLVANIA. Spider mites were constant pests of roses, azalea, camellia, and many other shrubs and annual flowers throughout ALABAMA. TWO-SPOTTED SPIDER MITE (T. urticae) was a problem on untreated chrysanthemums in Palm Beach County, FLORIDA, requiring control applications on a 5 to 7-day schedule. Spider mites were troublesome in MARYLAND on many ornamentals. ERIOPHID MITES infested ornamental maples in VERMONT. CYCLAMEN MITE (Steneotarsonemus pallidus) was a local problem in San Mateo County, CALIFORNIA.

FOREST INSECTS 1/

Situation in the Western States

BARK BEETLE infestations, including several major ones, were dominant among the many insect problems affecting the forest resources in the Western United States. Easily the most important were the chronic epidemics of MOUNTAIN PINE BEETLE (Dendroctonus ponderosae) in stands of lodgepole pine on the Targhee National Forest, IDAHO, and on the Teton National Forest and Teton National Park, WYOMING. However, despite the widespread infestations and serious depletion of the resource that occurred in 1966 and is predicted to continue in 1967, there is some evidence there may be a general decline from peak levels of populations.

The mountain pine beetle was a major pest elsewhere in the West. For example, serious infestations occurred in many stands of lodgepole pine in eastern OREGON. This beetle took a heavy toll of second-growth ponderosa pine, also in eastern Oregon; seriously depleted the volume of mature western white pine in parts of Montana and northern Idaho; and killed many ponderosa pines previously top-killed by ENGRAVER BEETLES (Ips. spp.). Mountain pine beetle, referred to as the Black Hills beetle in the central Rocky Mountains, killed many ponderosa pines on State and private lands in the Black Hills of SOUTH DAKOTA, and on the San Juan National Forest, COLORADO; and it killed many limber pines on the Shoshone National Forest, WYOMING.

On a regional basis, except for the serious bark beetle situation, insect problems were numerous, but much less serious than during the past few years.

The situation in ALASKA remained much the same as in 1965. A LEAF TIER skeletonized aspen and birch in the Fairbanks area, and HEMLOCK SAWFLY (Neodiprion tsugae) populations increased somewhat in the southeast; however, BLACK-HEADED BUDWORM (Acleris variana) infestations, while noticeable as far north as Circle, remained low. The SITKA-SPRUCE BEETLE (Dendroctonus obesus) killed patches of white and Sitka spruce on the Kenai Peninsula; suppression may be warranted in that high-value recreational area.

In OREGON and WASHINGTON, the most troublesome insect was the MOUNTAIN PINE BEETLE. Outbreaks occurred on some 300,000 acres of lodgepole and ponderosa pine. Another principal concern among forest landowners was the continued spread of the LARCH CASEBEARER (Coleophora laricella) in eastern Washington and a resurgence of a NEEDLE MINER in part of Oregon. Although the EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) was found again in three Washington communities outside the containment zone, and in one forest nursery in Oregon, steps were taken to eradicate the moth in these areas. (Distribution map of R. buoliana, p. 272).

A sharp increase in damage from BARK BEETLES dominated the insect situation in CALIFORNIA. In the northwestern part of the State, DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) killed thousands of trees in and adjacent to areas affected by floods and strong winds 2 years ago. In the northeastern counties, the JEFFREY PINE BEETLE (D. ponderosae) was destructive. Elsewhere in the State, droughts in the summer and fall triggered outbreaks of ENGRAVER BEETLES (Ips spp.) and gave impetus to WESTERN PINE BEETLE (D. brevicomis) infestations in ponderosa pine.

1/ This summary is the introduction of highlights section of the "Forest Insect Conditions in the United States - 1966" which was compiled and published by the Forest Service, U. S. Department of Agriculture. Copies of the complete annual summary are available upon request from the Regional Forester or Area Director in your area. Addresses of the regional offices may be found on page 259 this issue of the CEIR.

The overall condition of forest insect infestations in northern IDAHO and MONTANA was much improved from prior years. Noteworthy was a marked decrease in the long-term outbreaks of SPRUCE BUDWORM (Choristoneura fumiferana) in Montana. However, new but not severe budworm infestations developed near Missoula, and increased somewhat the population in northern Idaho. The LARCH CASEBEARER continued its spread in stands of western larch in both States, and the LARCH SAWFLY (Pristiphora erichsonii) and a LARCH BUD MOTH (Zeiraphera griseana) noticeably defoliated large areas. Other insect pests in the northern Rocky Mountains were a PINE NEEDLE-SHEATH MINER (Zelleria haimbachi) and a PINE TUSSOCK MOTH (Dasychira sp.). The BLACK-HEADED BUDWORM resurged on the Kootenai National Forest, Montana, and on the Kaniksu National Forest, Idaho.

In the central Rocky Mountains, forest insects were less troublesome than at any time during the past 5 years. The only noteworthy infestation of ENGLEMANN SPRUCE BEETLE (Dendroctonus obesus) occurred on the Grand Mesa-Uncompahgre National Forest, COLORADO. The largest and most continuous infestation of SPRUCE BUDWORM was also in Colorado, where light to moderate defoliation occurred on some 80,000 acres of mixed-conifer forests.

Noteworthy in the Intermountain States, in addition to the virulent epidemic of MOUNTAIN PINE BEETLE, was a sudden collapse of SPRUCE BUDWORM infestations on large acreages in IDAHO. The only other significant infestations were defoliation of lodgepole pine by a PINE TORTRIX in southern Idaho and western Wyoming, SAWFLY damage to pinyon pines in Nevada, and spotty defoliation of poplars in southern Utah.

DEFOLIATORS were the most important insect pests in the Southwest. The SPRUCE BUDWORM damaged one-half million acres of mixed conifers in southern and north-central New Mexico; the WHITE-FIR NEEDLE MINER (Epinotia meritana) persisted in some 50,000 acres of fir stands in northern ARIZONA; and a brief but virulent outbreak of DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) occurred on ornamental blue spruce near Santa Fe, NEW MEXICO. A SOUTHWESTERN PINE TIP MOTH (Rhyacionia neomexicana) was particularly damaging to natural regeneration and to some 2,000 acres of planted ponderosa pine in north-central Arizona. Other important insects included the DOUGLAS-FIR BEETLE, the ENGLEMANN SPRUCE BEETLE, and an ARIZONA FIVE-SPINED IPS (Ips lecontei); all three occurred locally in Arizona and New Mexico.

Situation in the Southern and Southeastern States

BARK BEETLES were the principal insect pests in the South and Southeast, and they killed many pines, particularly in TEXAS, LOUISIANA, MISSISSIPPI, and SOUTH CAROLINA. Fortunately, extreme cold early in 1966 halted SOUTHERN PINE BEETLE (Dendroctonus frontalis) infestations in TENNESSEE. Other significant insect problems in the Southern States were a rise in infestations of ENGRAVER BEETLES (Ips spp.) in portions of ARKANSAS and NORTH CAROLINA; serious tree killing by the BLACK TURPENTINE BEETLE (D. terebrans) in LOUISIANA, MISSISSIPPI, and TEXAS; damage to young pine plantations by the PALES WEEVIL (Hylobius pales) in coastal NORTH CAROLINA; and continued serious infestations of the BALSAM WOOLLY APHID (Adelges piceae) in stands of Fraser fir in NORTH CAROLINA. While DEFOLIATING INSECTS were more widespread and more severe in some locations than in 1965, none were serious enough to warrant direct control.

Situation in the Lake and Central States and the Northeast

FOREST DEFOLIATORS caused the greatest damage to the forest resource in the Lake and Central States and the Northeast. The JACK PINE BUDWORM (Choristoneura pinus) was the most important pest in the Central States, where infestation increased to the point where suppression may again be necessary. The SPRUCE BUDWORM (C. fumiferana) was the predominant insect in the Northeast, where some 100,000 acres of mixed fir and spruce near Oxbow, MAINE, will probably have to be suppressed. The FALL CANKERWORM (Alsophila pometaria) continued in outbreak numbers in northern PENNSYLVANIA and was abundant and damaging throughout parts of WEST VIRGINIA, NEW YORK, NEW JERSEY, and CONNECTICUT. Other forest defoliators, such as the GYPSY MOTH (Porthetria dispar), FOREST TENT CATERPILLAR (Malacosoma disstria), PINE SAWFLIES, and one or more species of LOOPERS, decreased. APHIDS, SCALES, WEEVILS, LEAF MINERS, and TIP and SHOOT MOTHS were damaging within their known areas of distribution in all States.

Suppression Activities

Public and private agencies cooperated to check damage and loss caused by forest insects. The major campaigns were directed against bark beetles. The largest effort by far against bark beetles was aimed at suppression of the mountain pine beetle in stands of lodgepole pine on the Targhee and Teton National Forests and in Teton National Park. At these locations, infested trees were cut and utilized, cut and burned, burned standing, or cut and sprayed with toxic oils.

The mountain pine beetle was also the target of control action in eastern Oregon. The infestations in lodgepole pine were handled primarily by logging in the affected stands. Beetles in western white and sugar pine stands were also checked by accelerating logging in the stands. Outbreaks of second-growth ponderosa pine were supressed by a two-prong attack. Populations in affected areas were first reduced by direct means, and then the stands were thinned to reduce basal area and relieve stand pressure. In some cases, thinning preceded the direct action taken to reduce populations.

Suppression in California also was directed chiefly against bark beetles, and operations were primarily limited to logging of the infested trees. In the north coast area, where Douglas-fir beetle infestations were severe, infested trees were logged along with other components of the stand. In areas where infested trees could not be salvaged, they were cut and the beetle broods were destroyed by treating the bark surface of the trees with penetrating sprays.

In the northern Rocky Mountains, control action was principally against spruce budworm. The largest suppression project was mostly on Bureau of Land Management lands east of Dillon, Montana. Use of 13 fluid ounces of technical malathion per acre reduced the total population 97 percent. A carbamate, at a rate of 0.15 pounds per gallon of kerosene per acre, was also used in a test to control the budworm on a small area of the Bitterroot Mountains, MONTANA. Definitive results of the test are not yet available, but control effectiveness appears to have been satisfactory.

Except for the large-scale campaigns to control mountain pine beetle infestations in Idaho and western Wyoming, only minor action was required to check damage and loss caused by other pests. The planned spraying to suppress spruce budworm on an extensive acreage of the Salmon National Forest was canceled in early June when it was learned that natural factors had reduced populations to low levels.

In the Southwest, control of forest insects was confined primarily to forest defoliators. The largest suppression project, directed against the spruce budworm in northern New Mexico, was not very successful. However, control efforts against a small outbreak of Douglas-fir tussock moth in and adjacent to Santa Fe, New Mexico, were highly successful, and no spread occurred from the focal center of infestation.

Bark beetles were the target of most of the control effort in the South and Southeast. Southern pine beetle infestations, particularly in Texas, Louisiana, Mississippi, and South Carolina, required suppression effort throughout the year. Fortunately, extreme cold in midwinter destroyed a virulent outbreak in Tennessee. Debris from floods and from stand distrubances caused by timber harvesting resulted in an upsurge in populations of black turpentine beetle, but these populations were checked by salvaging infested trees and spraying infested stumps. The pales weevil was controlled in pine plantations in North Carolina, and high-value Fraser firs were sprayed to protect them against more infestations by the balsam woolly aphid.

Suppression in the Central States, Lake States, and the Northeast was mostly in small areas. The saratoga spittlebug was controlled, as needed, in pine plantations in Michigan; the red-headed pine sawfly was treated in several areas; and the fall cankerworm was suppressed in high-value recreational sites in Pennsylvania. Minor programs contained white-pine weevil in Pennsylvania and New York, hemlock looper in New Hampshire, and jack pine budworm in Michigan and Wisconsin.

Pest Control Accomplishments

Insect	Location	Trees treated	Acres sprayed
Southern pine beetle	South and Southeast	240,000	
Black turpentine beetle	South and Southeast 1/	249,000	
Western pine beetle	California	17,500	
Black Hills beetle	South Dakota, Colorado, and Wyoming	9,000	
Mountain pine beetle	Utah, Idaho, and Wyoming	645,000	
Spruce budworm	Montana, Idaho, and New Mexico		131,000
Balsam woolly aphid	Mississippi, Tennessee, and North Carolina	52,000	
Fall cankerworm	Pennsylvania		1,000
Pales weevil	North Carolina		4,000
Miscellaneous	Entire United States	132,500	23,500
Total		1,345,000	159,500

1/ Includes treating of stumps.

REGIONAL OFFICE ADDRESSES

U. S. FOREST SERVICE

Region

1
U. S. Forest Service
Federal Building
Missoula, Montana 59801

2
U. S. Forest Service
Federal Center
Building 85
Denver, Colorado 80225

3
U. S. Forest Service
New Federal Building
517 Gold Street, S. W.
Albuquerque, New Mexico 87101

4
U. S. Forest Service
Forest Service Building
Ogden, Utah 84403

5
U. S. Forest Service
630 Sansome Street
San Francisco, California 94111

Region

6
U. S. Forest Service
P. O. Box 3623
Portland, Oregon 97208

7
U. S. Forest Service
6816 Market Street
Upper Darby, Pennsylvania 19082

8
U. S. Forest Service
50 Seventh Street, N. E.
Atlanta, Georgia 30323

9
U. S. Forest Service
710 N. Sixth Street
Milwaukee, Wisconsin 53203

10
U. S. Forest Service
Fifth Street Office Building
P. O. Box 1631
Juneau, Alaska 99801

SHADE TREES

Highlights:

FALL WEBWORM infestations were heavier in Delaware than in recent years, and heavy in areas of Illinois and in northwest Arkansas. MIMOSA WEBWORM was a major pest of mimosa in Alabama and caused light to heavy damage on host trees in Illinois. Mimosa webworm was recorded in Oklahoma for the first time. TENT CATERPILLARS were damaging in several areas. SATIN MOTH damaged poplars in Maine and caused heavy defoliation in Vermont. ELM LEAF BEETLE was again serious on elms in most areas where this pest occurs, especially in Oklahoma where infestations were serious for the ninth consecutive year. BRONZE BIRCH BORER continued a problem in Minnesota and caused heavy mortality of white birch in Indiana. EUROPEAN ELM SCALE and COTTONY MAPLE SCALE were serious in several areas. BIRCH LEAF MINER occurred in outbreak proportions in Maine, and was damaging in several other areas.

FALL WEBWORM (Hyphantria cunea) infestations were higher this season in DELAWARE than in recent years on a variety of hosts. First larvae of the season occurred in central OHIO in late July. Infestations were generally minor in central, east-central, southeastern and north-central areas until late August, when extensive defoliation became apparent. Although wild cherry was the principal host, apple, walnut, sycamore, elder, hickory, oak, mulberry, elm, hawthorn, and peach were damaged. Fall webworm was present in most areas of ILLINOIS, being very abundant in some locations. Populations in MISSOURI declined from those present in 1965. Damage was heavy on individual trees, but the number of trees infested was not as great as in previous years. Fall webworm was heavier in northwest ARKANSAS than in other areas of State, but lighter than in 1965. Larvae and webbing were present on 25 percent of chokecherry trees in western NORTH DAKOTA and completely defoliated many trees. Fall webworm damaged madrone trees in some coastal areas of CALIFORNIA.

FALL CANKERWORM (Alsophila pometaria) and SPRING CANKERWORM (Paleacrita vernata), in conjunction with several species of LEAF ROLLER MOTHS, caused heavy damage to shade and forest trees throughout NEW JERSEY. Fall cankerworm was heavy on maple and cherry in northwestern PENNSYLVANIA. Fall cankerworm was generally noneconomic in all areas of NORTH DAKOTA. Spring cankerworm males emerged April 11 and females 2 weeks later in North Dakota. Light feeding was evident on some shade and shelterbelt trees, but damage was not extensive. Spring cankerworm defoliated elms and other shade trees in Lawrence, Pennington, and Yankton Counties, SOUTH DAKOTA, in late May. Some spraying was done. Fall cankerworm infested several species of trees and shrubs in the Saco area of MONTANA.

MIMOSA WEBWORM (Homadaula albizziae) was a major pest of mimosa trees throughout ALABAMA, but was a minor problem over ARKANSAS. Mimosa webworm was collected in Tulsa County for the first record in OKLAHOMA. Mimosa webworm caused light to heavy damage to honeylocust and mimosa in southern ILLINOIS by July 5, and light damage as far north as La Salle County by July 11. Damage was severe in many areas of Illinois. New county records were Lake, Bureau, and Cass. Numerous incidences of mimosa webworm on honeylocust indicate that populations were higher than normal in OHIO. Larval activity was first reported in early July and feeding continued through the summer and into early September. Infestations were reported from 12 counties over much of Ohio. Mimosa webworm ranged medium to very heavy during the summer on mimosa and honeylocust in central and southern MARYLAND, but was light on honeylocust in PENNSYLVANIA.

EASTERN TENT CATERPILLAR (Malacosoma americanum) was moderate to heavy over MAINE, but generally limited to wild cherry and abandoned or home apple trees. Heavy populations were scattered throughout VERMONT. Eastern tent caterpillar egg hatch began during mid-April in RHODE ISLAND and was most abundant in Providence and

Kent Counties. Infestations were less conspicuous than in previous years. Eastern tent caterpillar infestations were low throughout NEW JERSEY, but were conspicuous in the spring and early summer in VIRGINIA, especially on wild cherry. Eastern tent caterpillar eggs began to hatch in late April over most of southern OHIO. Larval growth was complete in the southern area and pupal cases were noted in late May. Adults appeared in blacklight traps in mid-June. Populations were larger this year than in previous years. Completely defoliated trees covered with webbing were not uncommon in southeastern Ohio counties, and elsewhere along the Ohio River. In areas where wild cherry and apple had been depleted, late-instar larvae occurred on a variety of deciduous trees and shrubs. Eastern tent caterpillar tents were present in east-southeast ILLINOIS by April 4. This pest was abundant in several areas of southern Illinois this season. Eggs of eastern tent caterpillar began hatching April 21 near Jamesville, WISCONSIN. Webs were evident on chokecherry by May 13 and some larvae were in the second instar. Populations were higher than for several years and many small chokecherry trees were completely defoliated.

FOREST TENT CATERPILLAR (Malacosoma disstria) was light with localized damage in an area of Washington County, MAINE. Spring populations collapsed in VERMONT, presumably as a result of natural environmental forces. Infestations were noted near Belvidere, NEW JERSEY. Forest tent caterpillar populations decreased to noneconomic levels this year in TEXAS. Populations have been heavy in central Texas for the past several years. Forest tent caterpillar populations were low over UTAH, but large numbers of adults were seen in the Gallatin Valley in MONTANA. Eggs and larvae were found in many locations in Montana, but no serious infestations were observed.

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) defoliated large numbers of cottonwood trees in Washington County, UTAH. Larvae of another TENT CATERPILLAR (M. incurvum discoloratum) caused heavy damage to elm and poplar in southeastern Clark County, NEVADA, during late March and early April.

SATIN MOTH (Stilpnotia salicis) was heavy and damaged poplars in Wales and Livermore, MAINE. Complete defoliation of small groups of poplars was observed in several areas. Defoliation of poplars was heavy in widely scattered locations in VERMONT. Satin moth larvae were abundant in Wallowa County, OREGON, on cottonwood, poplar, and willow. In the Lostine area, these host trees were totally defoliated.

WALNUT CATERPILLAR (Datana intergerrima) moths were collected in blacklight traps in Madison and Platteville, WISCONSIN, July 1. Light larval feeding was observed in Grant County late in July. Complete defoliation of several host trees was noted in western Wisconsin late in August. Migration from trees began early in September. Walnut caterpillar was heavy and caused light to complete defoliation of black walnut trees throughout the northern three-fourths of ILLINOIS. Damage to walnut foliage by walnut caterpillar was more common than usual in central and west-central OHIO. Major feeding damage occurred from late July to early September. Damage up to complete defoliation was reported from six counties.

Defoliation of catalpa trees by CATALPA SPHINX (Cerotomia catalpae) larvae was very common through much of OHIO. Defoliation by late-instar larvae of the second generation was apparent in early September and large numbers of defoliated catalpa trees were observed through September in central, north-central and west-central Ohio. Catalpa sphinx larvae were heavy at Hillside, NEW JERSEY.

Adults of an OLETHREUTID MOTH (Eucosoma gloriola) were collected May 6 in a pine plantation in Muskegon County, MICHIGAN, for a new State record. Egg laying was underway May 17 in Muskegon and Ottawa Counties. Larval injury occurred in a number of Ottawa, Muskegon and Wexford County plantations of Scotch and Austrian pines during June and July.

CARPENTERWORM (Prionoxystus robiniae) and other borers continued to cause serious log and lumber degrade in the hardwoods in MISSOURI. Carpenterworm was abundant in Madison, Glacier, Daniels, and Roosevelt Counties, MONTANA, and damaged cottonwood, walnut, and ash in Glenn County, CALIFORNIA.

Larvae of a GIANT SILKWORM MOTH (Hemileuca nevadensis) continued to strip native cottonwood at White Sands National Monument near Alamogordo, NEW MEXICO. ASPEN BLOTCH MINER (Lithocolletis tremuloidiella) was reported for the first time from MONTANA. Infestations occurred in Yellowstone, Roosevelt, McCone, Garfield, Phillips, and Richland Counties. A CLEARWING MOTH (Podosesia syringae) was numerous on ash in a weakened condition in MONTANA. Another borer, Lespersinus fasciatus, was also widespread on green ash in Chouteau, Glacier, Toole, Liberty, Hill, Blaine, Phillips, Valley, and Roosevelt Counties, Montana. POPLAR-AND-WILLOW BORER (Sternochetus lapathi) infestations increased on willows at Middleton, Kamiah, Sanders, and Lewiston, IDAHO.

SPRUCE NEEDLE MINER (Taniva albolineana) infestations in NEVADA remained at 1965 levels, and were found for the first time in Humboldt County. WESTERN OAK LOOPER (Lambdina fiscellaria somniaria) caused less foliar damage to native oak in the Willamette Valley of OREGON than in 1965. CALIFORNIA OAKWORM (Phryganidia californica) caused severe damage to oaks in the coastal areas of CALIFORNIA.

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) larvae were heaviest in several years on elm and willow in NEVADA. Larvae infested cottonwood and willow trees in the Butte and Dillon areas of MONTANA, and willow trees at both Stanford and Missoula. Larvae of a NYMPHALID BUTTERFLY (Polygonia interrogationis) infested elm in Smithfield, RHODE ISLAND, during mid-July.

ELM LEAF BEETLE (Pyrrhalta luteola) infestations were generally low in most areas of MAINE and damage was variable at several locations in VERMONT. Elm leaf beetle was moderately abundant in RHODE ISLAND, but was less conspicuous generally than in some previous years. Elm leaf beetle was common on elm in central NEW JERSEY, and was moderate in most areas of DELAWARE, where infestations were very heavy in some areas of New Castle County. Elm leaf beetle adults and larvae caused medium to heavy foliage injury to unprotected American and Chinese elms throughout MARYLAND. Elm leaf beetle caused serious damage to elms in central and northern ALABAMA, and damage was serious throughout most of OKLAHOMA for the ninth consecutive year. Elm leaf beetle continued heavy in nearly all areas of ARKANSAS. Elm leaf beetle damage was heaviest on Chinese elm in the metropolitan areas of MISSOURI, and was most serious on shade trees throughout the State of KANSAS. Most Siberian and hybrid elms were heavily damaged during the summer and damage ranged light to moderate on American elm. There are only 2 extreme western counties where this beetle is not known to occur in Kansas.

Elm leaf beetle spread to new areas in the northern half of NEW MEXICO and caused serious defoliation of Chinese elm trees. Control was not practical in most areas. This leaf beetle severely defoliated elm trees in nearly all areas of ARIZONA from May through July. Control efforts were not successful. Elm leaf beetle was very prevalent in many locations in CALIFORNIA and heavily infested elms throughout its range in NEVADA. Infestations were found in a second area of Las Vegas and the first time in Henderson, Clark County, Nevada. Elm leaf beetle defoliated and browned leaves of unsprayed elms in Jackson and Josephine Counties, OREGON. Damage ranged moderate to heavy over the entire State. For distribution of elm leaf beetle (map) see USDA Coop. Econ. Ins. Rpt. 16(45):1054.

COTTONWOOD LEAF BEETLES (Chrysomela scripta complex) caused light to moderate damage to willow and cottonwood at several locations throughout NORTH DAKOTA, and continued to infest cottonwood plantings in southeast MISSOURI. Damage is minor on the better cottonwood sites but increases on the poorer sites in Missouri. LOCUST LEAF MINER (Xenochalepus dorsalis) caused noticeable browning of foliage on black locust in central and southern sections of MARYLAND, and was heavy on locust in west central VIRGINIA in July and August.

WHITE-PINE WEEVIL (Pissodes strobi) adults were abundant on host plant leaders in late May and early August in RHODE ISLAND, with more than the usual amount of damage apparent Statewide.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) damaged elm in Walla Walla, WASHINGTON. Although reported from Klamath County in 1960, no Dutch elm disease has yet been found in the State. Smaller European elm bark beetle was not the problem in CALIFORNIA as in several years past, but did increase its range in north and northwest TEXAS. Adults emerged from mid-April to late July in north-central OKLAHOMA, and killed numerous drought-weakened elms in central KANSAS. Smaller European elm bark beetle populations continued in the southeast quarter of MINNESOTA, being highest in the St. Paul area. Populations continued heavy on American elm in Lower MICHIGAN, with Dutch elm diease being found in more trees. First adults were noted on June 3 and second-brood adults were still active in late September.

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) adults were active on May 16 and were recorded for first time from Cass, Barnes, and Richland Counties, NORTH DAKOTA. A CONE BEETLE (Conophthorus scopulorum) destroyed an estimated 47 percent of the ponderosa pine cone crop on the Sacremento Division of the Lincoln National Forest in NEW MEXICO. Damage by a BARK BEETLE (Phloeosinus cupressi) to cypress increased in many locations of CALIFORNIA.

TWIG PRUNER (Elaphidionoides villosus) was unusually prevalent throughout NEW HAMPSHIRE, but was less conspicuous than usual in RHODE ISLAND. TWIG GIRDLER (Oncideres cingulata) infestations were lighter in KANSAS than in the past 5 years.

Adults of a LEAF-MINING WEEVIL (Odontopus calceatus) were first reported feeding on yellow-poplar in southern OHIO in early May. Oviposition began in May and leaf mining activity had been in progress for some time by late May. Pupation of the 1966 larval generation had begun in southeastern Ohio by mid-June. Activity was widespread and occurrences were reported as far north as Ashland County in the northeastern part of the State. POPLAR-AND-WILLOW BORER (Sternochetus lapathi) killed willows in Whitman and Yakima Counties, WASHINGTON. A WEEVIL (Copturus floridanus) severely damaged West Indian mahogany trees during the autumn in the Miami area of FLORIDA.

BRONZE BIRCH BORER (Agrilus anxius) continued to be a problem in MINNESOTA. The isolation of blocks of birch appears to be major step in control. Heavy infestations caused high mortality of white birch throughout INDIANA. Unspecifed borers in hardwood continue to be the major problem in MISSOURI forests at the present time. BLISTER BEETLES were reported on shelterbelt and ornamental trees in many MONTANA counties. In NEVADA, two FALSE POWDER-POST BEETLES (Dendrobiella aspera and Xyloblaptus prosopidis) and a POWDER-POST BEETLE (Trogoxylon aequale) seriously infested mulberry trees in Clark County in April.

WOOLLY ALDER APHID (Prociphilus tessellatus) was heavy over widely scattered areas of VERMONT and was very abundant on maple in central and western VIRGINIA during June. BALSAM TWIG APHID (Mindarus abietinus) distored needles of balsam fir during early June in RHODE ISLAND, but there was no apparent increase in abundance. BEECH BLIGHT APHID (Prociphilus imbricator) was heavy in New Caslte County, DELAWARE. PAINTED MAPLE APHID (Drepanaphis acerifoliae) was heavy on maple in northwest ARKANSAS during fall. Unspecified APHIDS were heavy on shade trees in UTAH but were less general and troublesome than 1965. Many trees were sticky with honeydew from heavy infestations. Cinara curvipes infested alpine fir and other firs wherever these trees occur in MONTANA. Lachnus salignus was heavy on willow in northeastern NEVADA in September and October. Cinara spp. heavily infested pinyon pine in west-central Nevada in July, with many trees covered with honeydew. Prociphilus fraxinifolii was severe on ash trees in many locations. Cinara curvipes was heavy on spruce and juniper in a few locations of the State. COOLEY SPRUCE GALL APHID (Adelges cooley) and EASTERN SPRUCE GALL APHID (A. abietis) were more conspicuous than usual in RHODE ISLAND.

A LEAFHOPPER (Macropis fumipennis) killed first buds and delayed foliar development of honeylocust in eastern KANSAS during May and June. CICADAS severely damaged young trees in Boulder City, NEVADA, and a PSYLLID (Euphyllura arbuti) was heavy on madrone trees in the northern coastal area of CALIFORNIA.

ASH PLANT BUG (Neoborus amoneus) caused light damage to green ash at Embden and severe damage near Killdeer, NORTH DAKOTA. A PLANT BUG (Tropidosteptes vittifrons) caused heavy damage to ash trees in Clark County, NEVADA, in May and June, and another PLANT BUG (Plagiognathus gleditsiae) killed first buds and delayed foliar development of honeylocust in eastern KANSAS during the same period. Medium to heavy populations of a COREID BUG (Leptocoris rubrolineatus) on maple and boxelder were widespread over CALIFORNIA. A LACE BUG (Leptoypha minor) was severe on ash trees in many locations in California and A SPITTLEBUG (Clastoptera airzonana) damaged acacia trees in the southern part of the State. Another SPITTLEBUG (C. juniperina) was medium on ornamental and native juniper in Washoe County, NEVADA, during May and June. SYCAMOR LACE BUG (Corythucha ciliata) was heavy on individual sycamore trees during late summer in RHODE ISLAND, and was heavy in some areas of PENNSYLVANIA.

EUROPEAN ELM SCALE (Gossyparia spuria) was heavy and widespread on Chinese and American elm trees throughout the High Plains portion of TEXAS. Several trees were killed and many other severely damaged. European elm scale continue serious in western KANSAS. Many trees were killed and most trees had many dead branches. Populations were heavy in parts of Sheridan County, NEBRASKA, and limited infestations were reported from Billings, MONTANA. European elm scale was heavy on American elm in Grant County, WASHINGTON, for a new State record. European elm scale was a particular problem in Ventura County, CALIFORNIA, but occurs in many areas of the State.

BEECH SCALE (Cryptococcus fagi) was widely distributed wherever beech occurs in VERMONT, and was heavy on native beech in northeastern PENNSYLVANIA.

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) infestions were reported from Dryden, MAINE, in late July and control measures were applied again in Farmington. Particularly heavy infestations on ornamental soft and silver maples were reported from mid-June through July from 8 counties in north-central, northeastern and east-central OHIO. Cottony maple scale infestations were spotty but ranged moderate to heavy on silver maple in Jackson and Multnomah Counties, OREGON. EUROPEAN FRUIT LECANIUM (Lecanium corni) was severe on maple, oak, and sassafrass in PENNSYLVANIA. A LECANIUM SCALE (Lecanium canadense) occurred on elm trees at Hardin and Joliet, MONTANA.

OBSCURE SCALE (Melanaspis obscura) was heavy on pin and willow oaks at several locations in suburban Prince Georges County, MARYLAND, and was very heavy on pin oaks in one area of New Caslte County, DELAWARE. OLEANDER SCALE (Aspidiotus nerii) was more abundant on shade trees in CALIFORNIA than in past years.

A PIT SCALE (Asterolecanium minus) was heavy on white and chestnut oaks in PENNSYLVANIA, and infested some red oaks in the State. This pit scale was severe on oaks in a few locations in CALIFORNIA. AN OAK KERMES SCALE (Kermes pubescens) infested pin and bur oaks throughout eastern KANSAS, causing distortion and yellowing of leaves and shortening of twig growth.

BIRCH LEAF MINER (Fenusa pusilla) eggs began hatching on gray and white birch in the Orono area of MAINE in early June. Infestations were in outbreak proportions in most areas of the State by the end of first brood activity on gray birch. Stands of birch trees between Bangor and Waterville and stand in coastal areas of Hancock and Washington Counties showed complete leaf mortality by early July. Birch leaf miner infestations were light in RHODE ISLAND, the second generation being especially inconspicuous. Another LEAF MINER (Profenusa sp.) was more severe on white birch in central Oxford County than was birch leaf miner. Birch leaf miner continued to damage ornamental birch in most areas of VERMONT and was common on birch in CONNECTICUT. Heavy infestations of birch leaf miner occurred throughout NEW JERSEY and in most areas of DELAWARE. Birch leaf miner defoliated 100 percent of gray birch in northeastern PENNSYLVANIA. Birch leaf miner larval feeding was evident on birch in Madison, WISCONSIN, by May 30. Damage was severe in sections of Door and Calumet Counties in June. Infestations were numerous across the central third of the State in July and August. Birch leaf miner continued to spread in OREGON nurseries growing birch trees. This leaf miner was found on 12-year-old birch trees in Lane County and adults emerged April 11 in Multnomah County.

A SAWFLY (Profenusa maineusis) was heavy and damaged red and white oaks in MAINE. Another SAWFLY (P. lucifes) was light and damaged white oaks in western Maine in July. This was the first record of P. lucifex on white oak in Maine. PEAR-SLUG (Caliroa cerasi) infested mountain ash, cherry, plum, crab, quince, and other trees and shrubs in MONTANA. BROWN-HEADED ASH SAWFLY (Tomostethus multicinctus) damaged ash trees in Shasta County, CALIFORNIA, and was moderate on ash foliage in Peace Dale, RHODE ISLAND during mid-June. Also in Rhode Island, MOUNTAIN-ASH SAWFLY (Pristiphora geniculata) infested mountain-ash locally in Kenyon, and LARCH SAWFLY (P. erichsonii) defoliated ash on 5-acre plot at Westerly and a smaller planting in Hopkinton during mid-July. DUSKY BIRCH SAWFLY (Croesus latitarsus) defoliated 100 percent of gray birch in northeastern PENNSYLVANIA. ELM SAWFLY (Cimbex americana) damaged trees in several areas of NORTH DAKOTA. Complete defoliation was evident on 38 percent of trees in a mile-long willow planting in Cass County. A GALL WASP (Diplolepis polita) was more prevalent than usual in CALIFORNIA and damaged live oak in a few locations.

MAPLE BLADDER-GALL MITE (Vasates quadripedes) severely deformed foliage of maple and other trees throughout NORTH DAKOTA and was common on silver maple in most of MINNESOTA. Maple bladder-gall mite was more prevalent than usual in southeast NEBRASKA in early June, but was normal in CONNECTICUT.

SPIDER MITES were unusually heavy on various shade trees over NEVADA. Tetranychus spp. caused moderate to heavy damage to pine and fir in portions of eastern NEBRASKA in early July and were moderate on cedars in Sheridan County in mid-July. A SPIDER MITE (Eotetranychus multidigituli) was very heavy on honeylocust in Montgomery County, PENNSYLVANIA.

MAN AND ANIMALS

Highlights:

MOSQUITOES were again annoying in many areas of the Nation, but populations were lower than in 1965 in some areas due to dry conditions. Adult populations of Mansonia perturbans were the heaviest in 8 years in Minnesota and Anopheles walkeri was 10 times as numerous in that State as in 1965. Encephalitis was the most important insect-borne disease in Kansas, and a mild epidemic of St. Louis encephalitis occurred in Texas following a buildup of mosquito populations in the Dallas and Corpus Christi areas. Populations of FACE FLY continued high in Vermont and were the heaviest in 3 years in central Maryland, but were not so abundant in Pennsylvania. Face fly was a problem in some areas of Wisconsin, and heavy populations built up in Nebraska. HORN FLY and STABLE FLY were problems in some areas. Self-sustaining populations of SCREW-WORM are now considered to have been eliminated in the Southwest. CATTLE GRUBS, HORSE FLIES, and DEER FLIES were economic in some areas of the Nation. Several CATTLE LICE were of some concern and various TICKS were annoying and occasionally numerous.

MOSQUITOES were not a problem in FLORIDA where control of Aedes taeniorhynchus was very succesful in many counties. Aedes sollicitans and other mosquitoes were annoying throughout the season in ALABAMA, especially along the coastal areas and lakes. Heavy populations of SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) and other species built up during late summer in the Dallas and Corpus Christi areas of TEXAS and a mild epidemic of St. Louis encephalitis resulted. Southern house mosquito, Culiseta inornata, and Psorophora cyanescens were active in scattered areas of OKLAHOMA from mid-March to late November. Mosquito activity increased as early as late March in ARKANSAS and continued into late fall due to mild weather, with Psorophora confinnis the principal species involved. Various mosquitoes were severe in most areas of KANSAS with Aedes vexans domonant. Culex tarsalis populations increased in the Manhattan area late in the summer and intensified control efforts were initiated. Encephalitis was the most important insect-borne disease in Kansas. Of the 26 confirmed cases, 20 were of the St. Louis type and 6 the western type. Most of these cases occurred in the central area of Kansas.

Cool weather during April delayed the hatch of Aedes spp. in MINNESOTA. Culiseta inornata and Aedes spp. were dominant in larval collections during May. Light trap collections were light through June in the Minneapolis and St. Paul district, but heavy in areas immediately outside this district. Heavy rains during June resulted in the first large hatch of Aedes vexas. The heaviest adult populations of Mansonia perturbans in 8 years emerged during late June. These mosquitoes were extremely annoying, especially in areas near cattail swamps. Anopheles walkeri was 10 times as numerous as in 1965 in Minnesota. Light trap collections of Culex tarsalis were much lower than in 1965. Larvae of Aedes spp. were nearly full grown by May 4 in WISCONSIN and adults were observed May 13 in southern counties and by May 27 in the extreme northern counties. Annoyance to man and cattle was severe the first week of June. High soil moisture resulting from heavy rains in the fall of 1965 contributed to ideal breeding conditions in Wisconsin. High mosquito populations and severe annoyance to man occurred through June and into the second week of July. Aedes spp. and Culex spp. adults were present in many areas of MICHIGAN but were not particularly annoying during the cool weather of May and June. Aedes vexans adults moved into populated areas of Lower Michigan during mid-July and were extremely annoying. A. vexans was the most important and most numerous species in Lucas County, OHIO, during June. Various mosquitoes were expecially common in the Toledo area. A. vexans was also the most common mosquito in the Wright-Patterson Air Force Base area of Montgomery County during June.

Aedes spp. were considerably below normal on the Eastern Shore of MARYLAND during midsummer, although localized annoyance was experienced in late summer and fall on the lower Eastern Shore. Culex spp. were periodically very annoying during the summer to residents of several communities in Frederick and Prince Georges Counties. Mosquitoes were a severe problem during the early spring in most of CONNECTICUT and were heavy in scattered areas of VERMONT from early to midsummer. Mosquitoes reached peak levels during mid-June in the Orono area of MAINE. Abundant rainfall during late July resulted in hatches of Aedes cinereus and A. canadensis, but pools dried before adults emerged in many instances.

Several species of mosquitoes were again very annoying to man and animals in most areas of WYOMING, but due to cool, dry weather conditions during the spring and early summer, populations were smaller than in 1965. Mosquito populations were very much lower over NEVADA than in 1965 except in irrigated areas. Aedes spp. and Culex tarsalis were dominant. Mosquito populations were probably the lowest in many years in CALIFORNIA.

BLACK FLIES were not so annoying in CALIFORNIA as in past years. Black flies were heavy in some eastern areas of ARKANSAS for the first time in several years, and a few instances of these pests causing death of livestock were reported. Adults of a BLACK FLY (Simulium venustum) were extremely annoying to man and animals near rivers in eastern areas of NORTH DAKOTA. Black flies were annoying to man in areas near streams in WISCONSIN during May and continued annoying in many areas into June. Some annoyance by black flies was reported in Vilas County as late as mid-August. Some annoyance to cattle by these pests was reported early in the season in Wisconsin. Black fly adults were very annoying to man and animals in Allegany and Cecil Counties, MARYLAND, and were normally abundant during the season in CONNECTICUT. Black flies were heavy during late spring in VERMONT and increased during mid-June in central MAINE. Infestations in many areas of Maine did not build up as quickly as usual to the levels normally expected.

FACE FLY (*Musca autumnalis*) populations continued high in all sections of VERMONT, with counts of 35-40 per animal. Face fly was not so abundant during early summer in PENNSYLVANIA as usual. Counts averaged 7-8 flies per animal during late summer in the northwest area of the State and 38 per animal in a large beef herd in the southwest section of Pennsylvania. Face fly populations were the highest in 3 years on beef and dairy cattle in central counties of MARYLAND. During July and August, counts of more than 20 per head were common. Face fly was present on cattle in OHIO by early April, but did not increase appreciably until late June. Seasonally normal populations continued with maximum counts of 50 or more flies per face observed during August. Face fly counts of up to 10 per face were noted on a warm day in May on cattle in Shiawassee County, MICHIGAN. Populations were generally low but reached a high in early August when 20 or more flies per face were recorded on beef cattle in central Michigan. Face fly was scarce in INDIANA until mid-August when counts ranged 8-31 per face on cattle in north-central and northeastern districts. Infestations were light for the remainder of August through mid-September in the northern half of the State, with counts of 0-15 per face on pastured cattle. Face fly was first observed on cattle April 25 in Coles County, ILLINOIS. Populations were very low (0.3 per face) through May, June and the first half of July, but began to increase in late July. Highest counts of season in Illinois ranged 5-28 per animal on September 8 in McDonough County. Face fly populations were lower than during 1965 in MISSOURI. Counts throughout the season averaged 0-6 per head, with an occasional high count. Face fly counts ranged 1.2-37.3 per head during a survey in Missouri in August.

Face fly was observed on cattle during mid-May on Calumet County, WISCONSIN. Cool weather during May and June inhibited development, but populations increased during July. Face fly was a problem on a few farms in Wisconsin during August, but was much less troublesome than in previous years. Face fly was generally noneconomic to light throughout NORTH DAKOTA and was recorded for the first time in Barnes County. Face fly populations were much lower in SOUTH DAKOTA than during 1965. Very few had been observed by mid-July and by mid-August counts increased to 2 per face in untreated cattle herds. Treatment applied for horn fly (*Haematobia irritans*) was also effective for face fly. Highest face fly counts, less than 3 per face, were found during late August in eastern counties of South Dakota. An exceptional count of 10-30 per face was observed on a small herd in Lincoln County. In late August, counts ranged 4-5 per head on horses in Gregory County, South Dakota. Heavy populations of face fly built up late in the year in NEBRASKA. Face flay was first recorded in MONTANA in 1963 and is now found in several areas of that State. In IDAHO, face fly was first reported from Moscow on August 23, 1965, and has since been recorded from Moon National Monument and from 2 homes in St. Maries and 2 homes in Rocky Point. Face fly has been collected from livestock at Bonners Ferry and at Southwick. Infestations are presently isolated in Idaho. Face fly was sufficiently abundant to be a nuisance around homes in Pend Orielle County, WASHINGTON, and was again collected in Whitman County.

HOUSE FLY (*Musca domestica*) was annoying around hog and poultry operations in ALABAMA and was heavier than normal in ARKANSAS where it was a major pest in poultry houses. House fly became active during early April in OKLAHOMA and continued active through November. Populations in Oklahoma were not heavy until late June. In TEXAS, house fly was a nuisance in many areas. House fly was first observed in WISCONSIN during late May. Populations increased slowly during June and July and were numerous about barnyards. House fly populations were lower in CALIFORNIA than usual this season. LITTLE HOUSE FLY (*Fannia canicularia*) was extremely annoying statewide in IDAHO despite summer drought during 1966.

HORN FLY (Haematobia irritans) populations in TEXAS were the heaviest of the last several years and were annoying to livestock over the entire State during late summer and early fall, probably because of wet weather during late summer and early fall. Populations were light to moderate in OKLAHOMA through April and heavy during May and early June. Numbers decreased during late June and July with the fall increase beginning in early August. Counts were heavy through August and September and activity continued through November. Heaviest numbers, up to 50 per head, occurred during early July. Horn fly was heavier in ARKANSAS than in 1965 and was the most important pest of range cattle in KANSAS. Horn fly was also the most serious pest of cattle in MISSOURI where counts ranged 10-300 per animal in scattered areas. Horn fly averaged more than 200 per animal in the eastern section of NEBRASKA and over 100 per animal in the northern portion of the State by early July. Populations remained low during much of the season in NORTH DAKOTA, but increased by late summer. Severe infestations were evident by September.

Horn fly was again serious on cattle throughout WYOMING. Counts ranged 70-250 per side which was comparable to similar counts taken in 1965. Sprays and backrubbers were generally effective in the State. Horn fly was a major pest of cattle in Big Horn, Carter, and Missoula Counties, MONTANA but populations were about normal in NEVADA. A large amount of control was applied to cattle in CALIFORNIA for horn fly, although occurence was normal in the State this season. Horn fly was annoying to cattle in ALABAMA throughout the season, and was a problem on beef cattle during the summer at several locations in Frederick and Talbot Counties, MARYLAND. Horn fly was exceptionally heavy on pastured cattle in VERMONT. Horn fly numbers remaind low in INDIANA until July 8, when peak populations of 100-400 per animal on pastured cattle occurred in the Ohio River area and counts ranged 20-200 per pastured animal in the northwest, north-central and west-central districts of Indiana. Horn fly populations were heavy in southern ILLINOIS June 10-25 with counts ranging 0-1,000 per animal on pastured cattle. Populations remained low throughout the season in northern part of the State. Populations were low in western Illinois most of the season with up to 400 per animal observed on some cattle in early September.

STABLE FLY (Stomoxys calcitrans) was very light throughout the season in INDIANA and the highest populations of the season in ILLINOIS ranged 0-24 per animal in the western area of the State during late June. Stable fly was the most annoying fly affecting cattle in WISCONSIN. This pest was first observed in the State in mid-May and became a nuisance in August, being very numerous in central and south-central counties. Stable fly was light to severe on cattle herds in eastern NORTH DAKOTA and counts ranged 25-50 per side per cow during late July and early August in SOUTH DAKOTA compared with 75-100 in 1965. Stable fly counts in WYOMING ranged 6-15 per animal in the southern area and 8-20 in the northeastern area. These counts were slightly lower than those of 1965, at which time populations ranged 10-40 per animal in more heavily infested areas. The highest populations during 1966 occurred in Goshen, Platte, Campbell, Sheridan, and Johnson Counties. Stable fly ranged light to moderate on cattle throughout the year in NEBRASKA, with an increase noted in late August. In KANSAS, stable fly continued the most annoying pest of cattle in feed lots. Stable fly was sufficiently numerous to be annoying to cattle in MISSOURI, but was not a major problem in beach areas along the gulf coast in FLORIDA.

As a result of extensive Federal-State-local cooperative activities, the United States is now free of self-sustaining SCREW-WORM (Cochliomyia hominivorax) populations. This was accomplished through successive stages beginning with the southeastern States in 1958; proceeding westward to the States of Arkansas, Louisiana, Oklahoma, New Mexico, and Texas in 1962; and finally ending in the States of Arizona and California in 1965. The last established screw-worm populations in the U. S. were eliminated by the spring of 1966.

In the absence of a natural barrier in the Southwest, such as a high mountain range or a wide expanse of water, a unique sterile fly barrier has been established. It is not a "solid wall" against screw-worm migrating from Mexico.

The barrier is a designated area presently extending along the Mexico-United States border from the Gulf of Mexico to the Pacific Ocean. It includes an area of approximately 482,500 square miles in the United States and Mexico. The northern limits include portions of those States bordering Mexico, and the southern limits extend into northern Mexico.

The barrier zone operation is the only available means for protecting the entire country against the natural migration of screw-worm from Mexico. The economic benefits to the livestock industry are enormous. Livestock production is increased by greater numbers of healthy animals. Production costs are greatly decreased by eliminating the need for special care and handling of diseased animals.

During 1966, the following 1,883 laboratory-confirmed cases of screw-worm were reported in the United States: Texas 1,204, New Mexico 93, Arizona 515, California 71. A total of 2,051,769,250 sterile flies was released in the United States during 1966. From the Mexico portion of the barrier zone there were 8,653 laboratory-confirmed cased of screw-worm and a total of 3,898,921,200 flies was released. The cost of maintaining the sterile fly barrier zone is approximately $5,000,000 per year. For the past two years. screw-worm eradication activities have been hampered by weather conditions which favor the spread of native screw-worms. No cases of screw-worm have been reported in New Mexico since November 8, 1966.

HORSE BOT FLY (Gasterophilus intestinalis) was present around horses from early June to late November in OKLAHOMA and was reported in northern counties of CALIFORNIA.

CATTLE GRUBS (Hypoderma spp.) were about normal in NEVADA in 1966. The running of animals by adults was noted in WYOMING in early spring and summer, particularly in eastern areas. The use of systemic insecticides for control is increasing each year. Survey for cattle grubs during February in KANSAS indicated counts of 0.02-8.1 grubs per animal. The percent of infested cattle ranged 2-86. Populations were heaviest in southeast and south-central areas of the State. Cattle grub larvae averaged 14 per yearling and 5-9 on older animals during late April on untreated stock in central SOUTH DAKOTA. Infestations on range cattle in western NORTH DAKOTA ranged 0-41 larvae per animal. Larvae averaged 9.4 per head in 34 percent of these animals.

COMMON CATTLE GRUB (Hypoderma lineatum) populations decreased from previous years in ALABAMA and were light in ARKANSAS. Infestations ranged light to heavy in backs of cattle to mid-March in OKLAHOMA. Adults were active during April and May and early November. Common cattle grub adults were active over MONTANA, where the use of a systemic insecticide apparently diminished fly activity in 15 counties. The occurrence of common cattle grub in CALIFORNIA was complicated by restocking with shipped-in herds.

BLACK HORSE FLY(Tabanus atratus) was abundant on pastured cattle in Shoreham, VERMONT, with counts of 2-3 per animal. Adults of HORSE FLIES (Tabanus spp.) were very annoying to man and animals during the summer in tidewater areas of MARYLAND. Horse fly populations were very low throughout the season in Illinois, and were common throughout summer in WISCONSIN where numbers were very annoying in July. Horse flies were severe on cattle in some areas of MINNESOTA and were moderate on cattle in eastern areas of NORTH DAKOTA. Horse flies were very annoying to man and animals over WYOMING as they were in 1965. Insecticides and repellents on riding horses afforded some relief. Populations were most numerous in Laramie, Goshen, Platte, Hot Springs, Lincoln, and Teton Counties, Wyoming. Horse flies became active in OKLAHOMA during late April. Moderate numbers were present from mid-June to late September in many areas. STRIPED HORSE FLY (Tabanus lineola) and DEER FLIES (Chrysops spp.) were annoying to man and animals at many locations in Oklahoma.

Adult DEER FLIES were very annoying to man and animals during the summer in tidewater areas of MARYLAND. Chysops spp. very common and annoying throughout INDIANA during June, and unspecified deer flies occurred in central and northeast MISSOURI during early to mid-June. Deer flies were common throughout summer in WISCONSIN and very annoying during July. Deer fly populations were higher than during recent years in MINNESOTA. Deer flies were again very annoying to man and animals throughout WYOMING. Insecticides and repellents on riding horses were partially successful. Deer flies were most numerous in Laramie, Goshen, Platte, Hot Springs, Lincoln, and Teton Counties, Wyoming.

CATTLE BITING LOUSE (Bovicola bovis), LONG-NOSED CATTLE LOUSE (Linognathus vituli) and SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) were serious throughout ALABAMA, especially on range beef cattle and caused heavy losses during the late winter months. Various CATTLE LICE were moderate to heavy on cattle in many areas of OKLAHOMA until early April. Fall activity began in early November. Populations of cattle lice in WYOMING were comparable to those of 1965. These pests remain a problem in Wyoming although cattle are treated more effectively each year. Cattle lice were not a severe problem on cattle in CALIFORNIA.

HOG LOUSE (Haematopinus suis) infested hogs in OKLAHOMA until late March and fall activity was underway by mid-November. Hog louse was present throughout ALABAMA, but was not a problem on swine produced under well-managed conditions.

FLEAS (Ctenocephalides spp.) were present in normal numbers in CONNECTICUT, especially during the period of higher summer temperatures. There were more reports of fleas in NEW JERSEY than in 1965, especially from late July through September. Fleas were very annoying in ALABAMA homes throughout the year and control efforts were continuous and difficult. Fleas were very prevalent in CALIFORNIA during the summer and fall.

PUSS CATERPILLAR (Megalopyge opercularis) was heavy in areas of Cochise, Santa Cruz, and Pima Counties, ARIZONA, and caused concern to residents. GREATER WAX MOTH (Galleria mellonella) was more active than usual in KANSAS, with up to 5 percent of the live brood uncapped and killed in weaker bee hives. DERMESTID BEETLES (Trogoderma parabile and Trogoderma spp.) caused heavy mortality to a leafcutting bee (Megachile rotundata) in several alfalfa seed-growing areas of NEVADA.

WESTERN BLOODSUCKING CONENOSE (Triatoma protracta) was reported to have bitten numerous people during heavy migrations in foothill areas of Pima and Santa Cruz Counties, ARIZONA, and more occurrences and several instances of severe reactions to bites were reported in CALIFORNIA. BED BUG (Cimex lectularius) was more of a problem than during the previous 2 years in homes and chicken houses in Hughes, Jerauld, and Yankton Counties, SOUTH DAKOTA.

Heavy numbers of EUROPEAN EARWIG (Forificula auricularia) entered homes in Rockland, Camden, and Thomaston, MAINE, in late July, and was unusually abundant and annoying to homeowners in Cumberland and Kennebec Counties during early August. An EARWIG (Labidura riparia) continued to increase in ARIZONA where it was a problem to homeowners and necessitated continuous controls to prevent movement into homes. YELLOW JACKETS (Vespula spp.) were reported to have attacked domestic rabbits in Jackson County, OREGON. There were numerous reports during September of yellow jackets being annoying in and around school buildings, patios, and various recreation areas in the State.

AMERICAN DOG TICK (Dermacentor variabilis) adults were more abundant than usual in southern and central MARYLAND. Several cases of Rocky Mountain spotted fever were reported in Baltimore County. This tick was much more abundant throughout CONNECTICUT than usual. First seasonal activity of American dog tick in MICHIGAN was reported during May and populations were high during the year, especially in the Upper Peninsula. American dog tick was initially reported during late June in OHIO and peak periods of irritation occurred in central and south-central areas in late June. American dog tick was active in Washburn County, WISCONSIN, in early May. Populations were heavy by late May throughout the northern two-thirds of the State and as far south as Winnebago, Columbia, and Crawford Counties. This tick continued active in Wisconsin through June. American dog tick was active by mid-May in MINNESOTA and was very numerous during June and July. American dog tick was numerous in most eastern areas of NORTH DAKOTA, but only a few occurrences were reported in CALIFORNIA. American dog tick was of much concern to pet owners in many areas of OKLAHOMA.

WINTER TICK (*Dermacentor albipictus*) was epidemic on deer in PENNSYLVANIA during the winter of 1966 and 1967. Winter tick was light on cattle, horses, and deer through mid-April in OKLAHOMA. Fall activity began in mid-November with heavy, local populations present on horses in Oklahoma during late December. Winter tick was locally heavy on horses at a few locations in CALIFORNIA. ROCKY MOUNTAIN WOOD TICK (*Dermacentor andersoni*) was plentiful in a few localized areas of MONTANA, but numbers were generally lower than during 1965. PACIFIC COAST TICK (*Dermacentor occidentalis*) caused paralysis of livestock in a few locations of CALIFORNIA, but populations were not unusually heavy.

BROWN DOG TICK (*Rhipicephalus sanguineus*) infestations increased sharply in Clark County, NEVADA, and occurrence in CALIFORNIA was more frequent in the fall due to warm weather. Brown dog tick was heavy on pets in ARIZONA throughout the year. Brown dog tick infested dogs in areas of ARKANSAS, was present in most areas of PENNSYLVANIA, and was abundant in CONNECTICUT. The occurrence of brown dog tick in homes and apartments in NEW JERSEY increased compared with 1965.

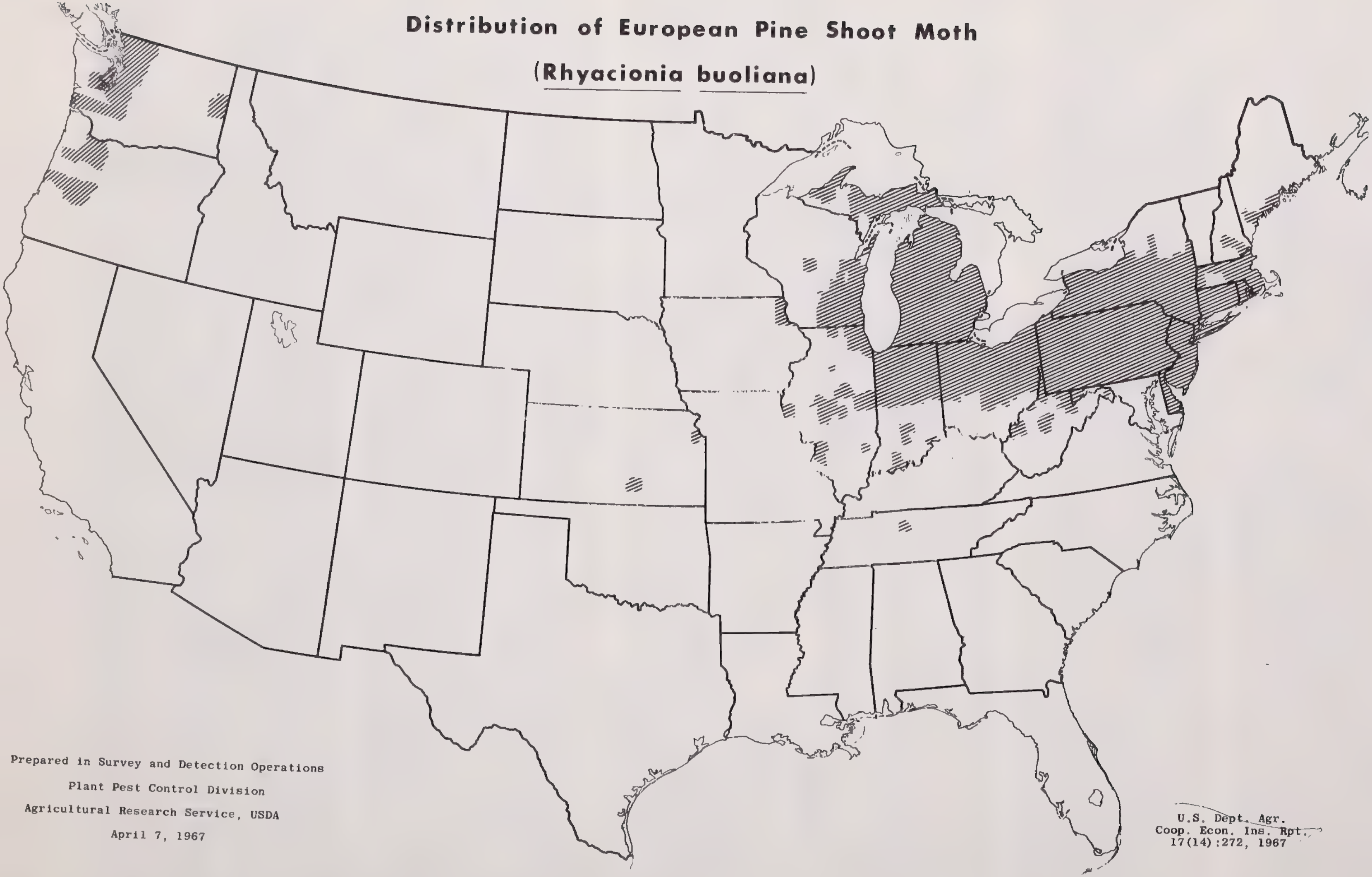
LONE STAR TICK (*Amblyomma americanum*) ranged light to moderate on cattle in eastern OKLAHOMA from late February to mid-April and was heavy from late April through mid-August. Lone star tick continued heavy in wooded areas and in brushy pastures in ARKANSAS. Lone star tick was found for the first time in ILLINOIS during 1966, being collected from deer during March in Williamson County and from deer in Pope County in February or March. The first occurrence of lone star tick on a human host in INDIANA was reported June 14 in Tippecanoe County. A heavy infestation was also reported on deer at the Crane Naval Depot in Martin County. Two other ticks, were minor problems in PENNSYLVANIA. *Ixodes cookei* was frequently encountered on wood chucks, oppossum, dogs, man, and other medium sized mammals, and *I. dentatus* infested rabbits in the southern portion of the State.

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) infestations were variable on poultry in ARKANSAS, but were heavy on 5 percent of infested flocks. This mite was found for the first time in Hempstead County, Arkansas. Infestations increased in CALIFORNIA due to resistance to control measures. TROPICAL RAT MITE (*Ornithonyssus bacoti*) infestations were reported in many homes in CALIFORNIA and numerous individuals were annoyed by this mite in native habitats. There was some increase in occurrence of CHICKEN MITE (*Dermanyssus gallinae*) in California. Chicken mite also caused some degree of annoyance in homes and camps in various areas of Kennebec County, MAINE. CHIGGER MITES (*Trombicula* spp.) were initially reported this season during late June in OHIO and peak periods of irritation occurred in central and south-central areas of the State later the same month.

BLACK WIDOW SPIDER (*Latrodectus mactans*) was more prevalent in CALIFORNIA than in many years, but was frequently reported around homes in Jackson, Lane, Marion, and Multnomah Counties, OREGON. A BROWN RECLUSE SPIDER (*Loxosceles reclusa*) continued active in homes throughout OKLAHOMA, and several persons were bitten this year. A single specimen of *L. reclusa* was found in Tucson, ARIZONA, during August after a man had been bitten. This was a new State record. No other specimens were found after that recovery.

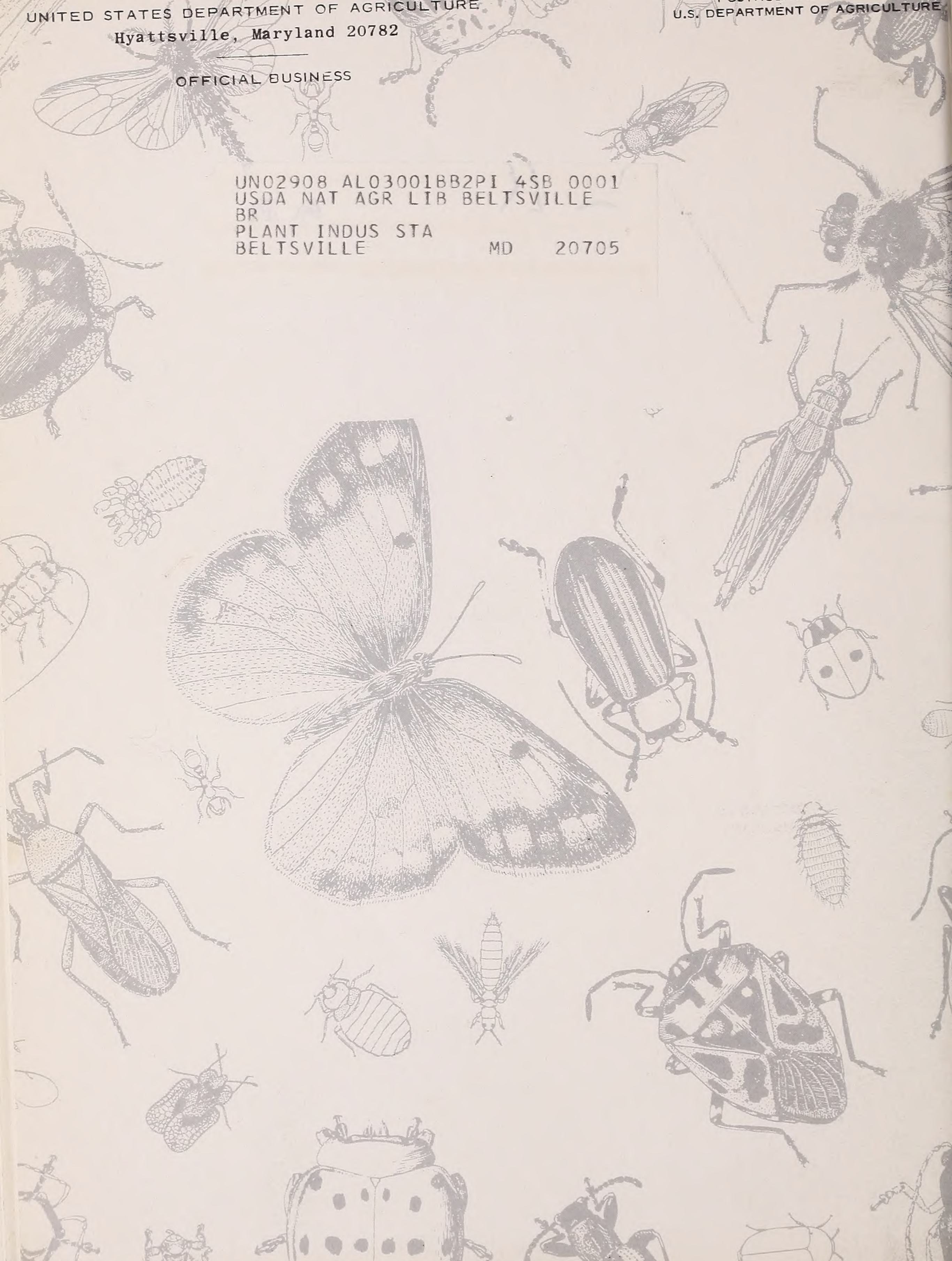
Distribution of European Pine Shoot Moth

(*Rhyacionia buoliana*)



Prepared in Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service, USDA
April 7, 1967

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
17(14):272, 1967



UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

OFFICIAL BUSINESS

U.S. DEPARTMENT OF AGRICULTURE

UN02908 AL03001BB2PI 4SB 0001
USDA NAT AGR LIB BELTSVILLE
BR
PLANT INDUS STA
BELTSVILLE MD 20705